Montara Operations Environment Plan Summary

TECHNICAL DOCUMENT

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1 INTRODUCTION

PTTEP Australasia (Ashmore Cartier) Pty Ltd (PTTEP AA) is the Titleholder undertaking the operational activity within production licences AC/L7 and AC/L8, which includes the Montara Development Project area (MDP). The MDP includes operating the Montara, Swift, Skua and Swallow fields and operating the existing facilities for commercial production of the oil reserves. Oil is being extracted from production wells in each of the fields and transported in flow lines to the Montara Venture Floating Production, Storage, and Offloading Facility (FPSO) facility via the Montara Well Head Platform (WHP). The Montara Operations Environment Plan (EP) was previously submitted and approved in 2013.

NOPSEMA conducted an inspection of PTTEP AA's facilities in March 2017. In June 2017, NOPSEMA issued PTTEP AA with an improvement notice (ID number 663) relating to environmental management of its Montara Project. In addition to being given 90 days to respond to the improvement notice, NOPSEMA also requested PTTEP AA revise and resubmit the EP.

The revised EP has been prepared in accordance with the requirements of the Offshore Petroleum Greenhouse Gas Storage (Environment) Regulations 2009 (OPGGS(E)R). It has been updated to address the key inspection findings and align with Industry good practice. This EP Summary has been prepared as per the requirements of Regulation 11(3) and (4) of the OPGGS(E)R.

In parallel to developing this current EP, PTTEP AA is also conducting a comprehensive 5-year review of the entire EP for submission to NOPSEMA in early 2018. Therefore, this EP Summary relates to an EP which will have a validity period between December 2017, and the point in time in which the fully revised EP is approved in 2018.

1.1 THE TITLEHOLDER

The Montara Development Project comprises the Montara (AC/L7), and Skua, Swift and Swallow (AC/L8) fields. The Titleholder undertaking this activity within AC/L7 and AC/L8 production licences is PTTEP Australasia (Ashmore Cartier) Pty Ltd (PTTEP AA). Contact details for PTTEP AA are as follows:

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1.2 TIMING OF ACTIVITY

Montara production commenced in Quarter 2 2013.

The MDP is expected to have a project life of approximately 12 years, with an indicative facility capacity of 30,000bbl per day of crude oil, declining over the life of the project as is typical for oil field developments.

Note: The drilling of an additional production well (Montara H5) took place in September and October 2017. The activities associated with that activity are detailed within the Montara Production Drilling Environment Plan Summary, available on the NOPSEMA website.

1.3 LOCATION OF ACTIVITY

The Montara Development Project (MDP) is located in Commonwealth waters within Production Licences AC/L7 and AC/L8 in the Timor Sea, between Australia and the island of Timor approximately 690 km (373 nm) east of Darwin in a water depth of approximately 77 m (LAT) (refer Figure 1.1).

The MDP includes operating the Montara, Swift, Skua and Swallow fields for commercial production of the oil reserves. Oil is extracted from production wells in each of the fields and transported in flow lines to the Montara Venture Floating Production, Storage and Offloading (FPSO) facility via the Montara Well Head Platform (WHP).

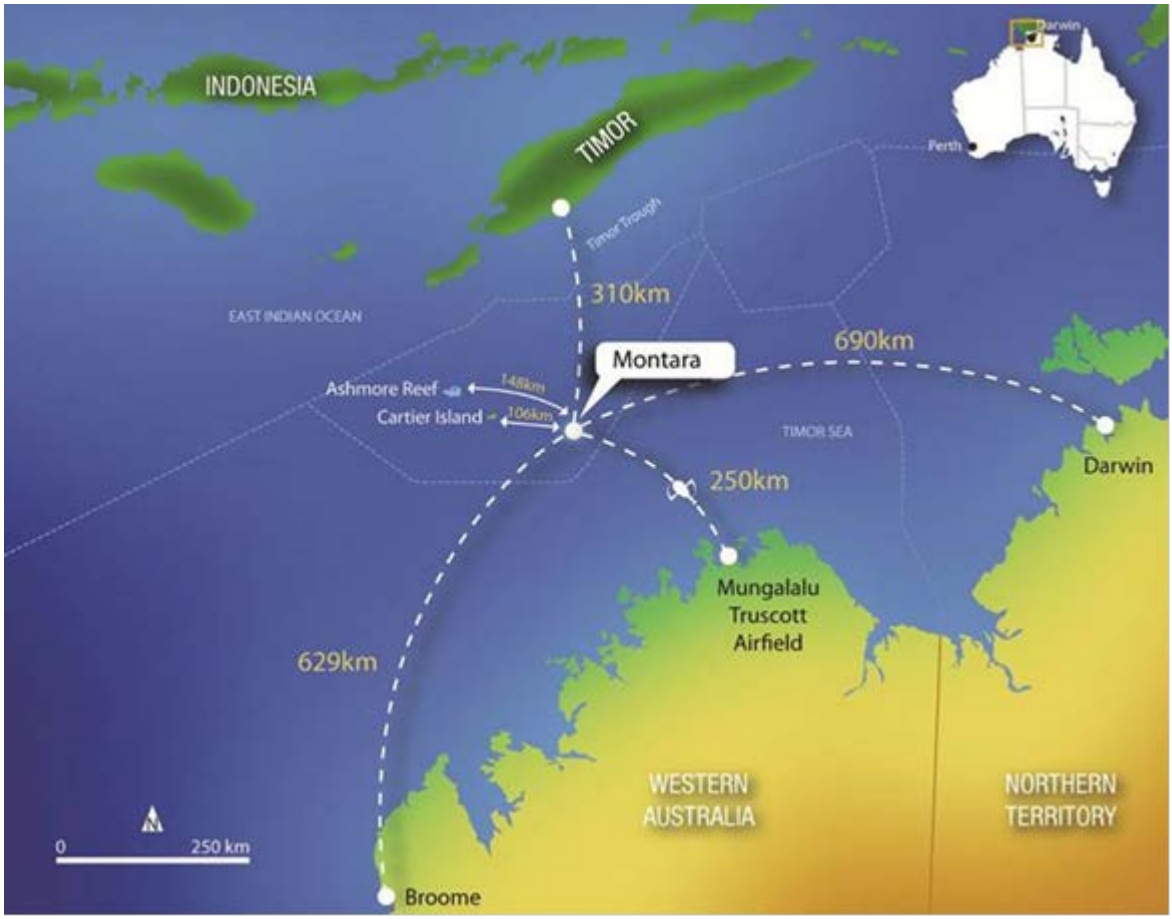

Figure 1.1 Site Location of MDP Area

2 DESCRIPTION OF THE ACTIVITY

2.1 FACILITIES DESCRIPTION

The MDP consists of the following infrastructure at the coordinates listed in Table 2.1 below:

- An unmanned wellhead platform (WHP) at the Montara field;
- Five (5) subsea wells for development of the Skua, Swift and Swallow fields;
- Production flowline system consisting of two (2) 6- inch, one (1) 10 inch and three (3) 14 inch flowlines and associated tie-in spools;
- Gas lift flowline system consisting of one (1) 6 inch and three (3) 4 inch flowlines and associated tie-in spools;
- Three (3) infield control umbilicals and associated flying leads;
- A subsea manifold in the Swift field for comingling the production fluids and distributing the compressed gas and electro-hydraulic services to the subsea wells; and
- A FPSO facility and its associated mooring system located approximately 1.5 km northeast of the WHP. Two (2) 10 inch Flexible Production Risers and associated riser bases. One (1) 6 inch Flexible Gas Lift Riser and associated riser base. Two (2) control umbilicals and associated riser bases. One (1) gas compressor for the gas lift system.

Figure 2.1 presents an overview of the Montara Development Infrastructure.

Table 2.1 Montara Development Infrastructure Coordinates (Surface) (GDA 94, Zone 51)

Well and Infrastructure Locations	Latitude (South)	Longitude (East)
Montara Venture FPSO (Turret centre)	12° 39' 35.3”	124° 32' 41.1”
Wellhead Platform	12° 40' 20.5”	124° 32' 22.2”
Swallow 1 Subsea well	12° 32' 29.5”	124° 26' 36.8”
Swift North 1 Subsea well	12° 31' 29.9”	124° 27' 33.7”
Swift-2 Subsea well	12° 32' 3.6”	124° 27' 6.0”
Skua 10 Subsea well	12° 30' 4.6”	124° 25' 5.4”
Skua 11 Subsea well	12° 30' 4.6”	124° 25' 5.6”
Montara H5 ST-1 well	12° 40’ 20.466”	124° 32’ 22.320”
Montara H5 ST-2 well (completed October 2017. Side track of Montara H5 ST-1)	12° 40’ 20.466”	124° 32’ 22.320”
Montara H4 well	12° 40’ 20.547”	124° 32’ 22.321”
Montara H3 ST-1 well	12° 40’ 20.548”	124° 32’ 22.162”
Montara H2 well	12° 40’ 20.548”	124° 32’ 22.241”
Montara G2 well	12° 40’ 20.466”	124° 32’ 22.320”

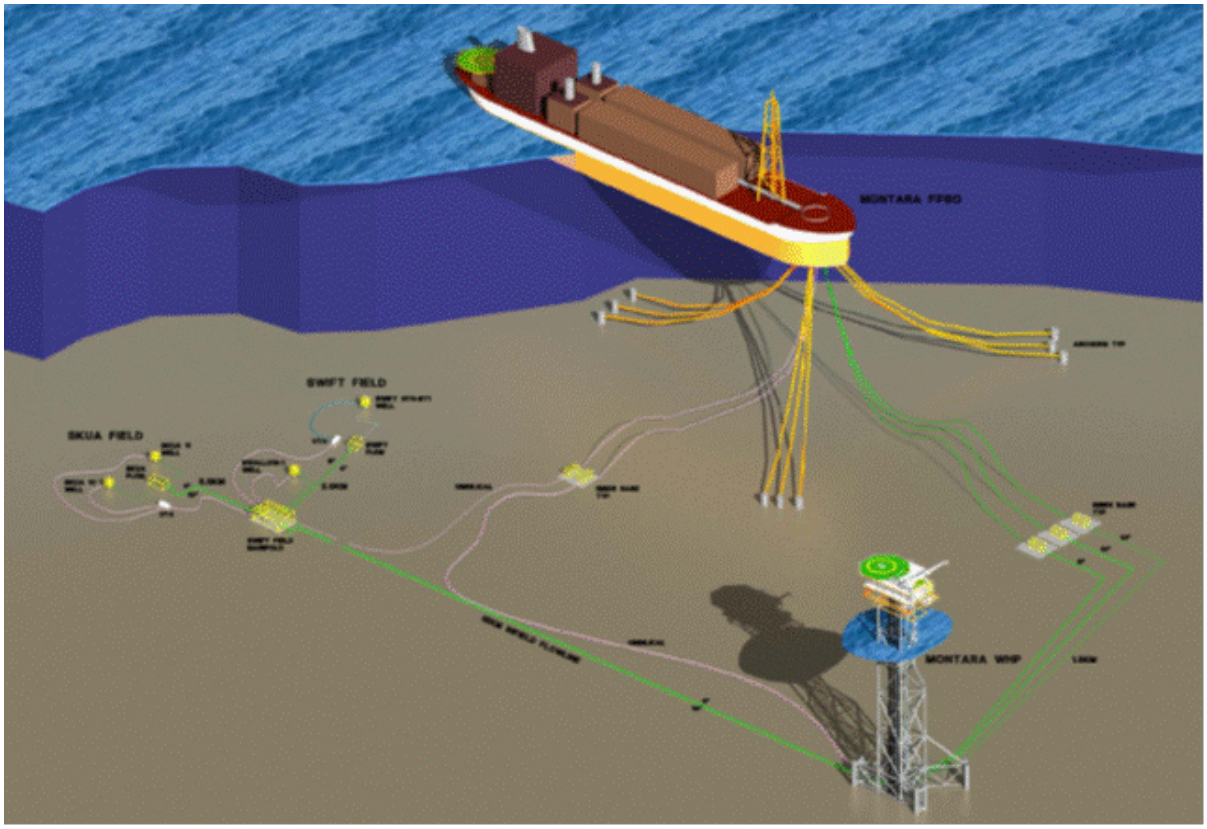

Figure 2.1 Montara Development Infrastructure

2.1.1 Wellhead Platform

The Wellhead Platform (WHP) is an unmanned operation platform. No hydrocarbon processing is performed on the WHP. Hydrocarbon production fluids from the Swift and Skua subsea wells are commingled subsea and arrive at the WHP to be commingled with the Montara production fluids. The commingled fluids are then exported to the FPSO via the two export flowlines. The WHP is designed to:

- act as a support structure for Montara wellheads and risers, including future allowances;
- collect and commingle the output from the individual wells and facilitate well flow rate and control;
- provide for gas re-injection and gas lift;
- provide for remote control from the FPSO; and
- provide for well testing with control from, and data to, the FPSO and the ability to backflow re-injection gas through flowlines.

2.1.2 Montara Venture FPSO

The Montara Venture has been converted from a crude tanker to an FPSO facility. The FPSO is be permanently moored (for the operational life of the field) in the Montara field utilising a disconnectable turret mooring system. However, disconnection is not required for any weather conditions.

The maximum personnel on-board for the FPSO is 58, based on accommodation and safety equipment provisions. The expected normal complement for operation and maintenance of the facility is 29 crew plus an average of six casual visitors.

The vessel specifications are as follows:

Vessel Name:	Montara Venture (ex Freeway/Genmar Alta)
IMO Number:	8714982
Dead Weight Tonnage:	146,251 mt
Length:	274.3 m
Moulded Breadth:	43.2 m
Moulded Depth:	23.8 m
Nominal Oil Storage Capacity:	700,000 barrels

The Montara Venture FPSO has been built and equipped to include the following:

- 1 x 3-stage oil separation train;
- Gas Dehydration via Glycol Contactor;
- Glycol Re-generation;
- Produced Water Treatment,
- Fuel Gas Treatment;
- Inert Gas System;
- Chemical Injection and Storage;
- Seawater Cooling Water Lift Pumps;
- Electrical Power Generation and Distribution;
- Crude Offloading Facility; and
- Flare Tower

2.1.3 Single Point Mooring System

The Montara Venture FPSO is moored by a Single Point Mooring (SPM) system. The system comprises nine chain and wire mooring legs secured to the seabed by piles, a buoy and riser system and a fluid, gas, power and utility swivel system. Each mooring line is composed of chain and wire rope segments, which is connected to a Submerged Turret Production (STP) buoy at the turret level and to 9 driven anchor piles driven to a depth of approximately 23 metres.

The turret for the FPSO is an inboard design to allow the vessel to freely weathervane at all times. The FPSO is designed to remain on station during all weather conditions and will be permanently moored with disconnection only anticipated should the FPSO require shipyard facilities. Operations on the turret will be limited to maintenance and repair activities. The turret will provide connections for all dynamic risers and umbilical lines.

2.1.4 Wells

The Montara field development consists of both subsea and platform wells. Apart from the differences in wellhead and Xmas Tree designs, the basic well construction is the same. All equipment items installed within the wellbore are designed to allow well fluids to be produced in a safe and controlled manner. These items include the steel casing liner cemented into the wellbore. The casing of the wellbore serves a number of functions:

- To prevent deterioration of the hole, e.g. caving-in, swelling, wash-outs;
- To effectively isolate formations penetrated while drilling and hence prevent cross-flow of fluids from higher to lower pressure zones;
- To provide a sealed passage for flow of well fluids to the production tubing. The production casing and/or liner are the only sections that are exposed to the well fluid. This is important in avoiding leakage of well fluids to the surface from outside of the wellbore; and
- To provide pressure integrity for gas-lift and well killing.

The production string consists of production tubing, flow control valves, isolation packers, landing nipples, sand excluder/control screens and other specialised equipment to provide a flow path for the reservoir fluids to the wellhead.

A Surface Controlled Subsurface Safety Valve (SCSSV) is installed in each of the wells tubing strings at approximately 300 metres below the seabed to prevent uncontrolled flow in an

emergency situation. In the worst case, when a wellhead or subsea wellhead has been damaged, the SCSSV may be the only means of preventing uncontrolled flow from the well. The SCSSV are installed at a depth that is below the crater damage depth should a surface explosion occur.\

2.1.5 Swift Manifold

A single manifold is located at the Swift field to incorporate multi-phase metering, chemical/controls umbilical and gas lift distribution and production fluid commingling. The manifold is a carbon steel structure and commingles the hydrocarbons from Swift and Skua wells into the WHP flowline and support a subsea distribution unit for the subsea production control system. A multi-phase flow meter is incorporated into the manifold and valving has been arranged so that flowlines can be isolated to allow individual well testing at periodic intervals.

2.1.6 Flowlines

All subsea flowlines and spools are carbon steel, with the exception of the connection to the FPSO where there is a transition to flexible flowlines. A summary of the flowlines is provided in Table 2.2.

Table 2.2 Details of Flowline Infrastructure for MDP

From	To	Service	Internal Diameter (mm)	Design Pressure (kPag)	Approximate Length (m)
WHP	FPSO	Production	356 (14”)	7,000	1,500
WHP	FPSO	Production	356 (14”)	7,000	1,500
FPSO	WHP	Gas Lift/Injection	152.4 (6”)	28,000	1,500
Swift Manifold	WHP	Production	356 (14”)	28,000	18,000
WHP	Swift Manifold	Gas Lift	101.6 (4”)	28,000	18,000
Skua	Swift Manifold	Production	254 (10”)	28,000	5,400
Swift Manifold	Skua	Gas Lift	101.6 (4”)	28,000	5,400
Swift North 1	Swift Manifold	Production	152.4 (6”)	28,000	2,500
Swift Manifold	Swift North 1	Gas Lift	101.6 (4”)	28,000	2,500
Swallow 1	Swift Manifold	Production	152.4 (6”)	28,000	40
Swift Manifold	Swallow	Gas Lift	101.6 (4”)	28,000	40

The flowlines are installed on the seabed untrenched and in piggybacked bundles. All flowlines are carbon steel and have been production coated for external corrosion protection. All subsea flowlines will be designed for corrosion resistance, based on the fluid properties and the material selection. The WHP to FPSO production flowlines are also concrete-coated to achieve on-bottom stability. Internal corrosion protection is via injection of corrosion inhibitor at the wellheads (via the umbilical) and by sacrificial corrosion (wall thickness) allowance as a contingency.

2.1.7 Umbilicals

The umbilicals are thermoplastic with a polyethylene outer sheath. They are laid directly on the seabed and are not buried or protected. The umbilicals supply instrument power, signal, hydraulic power and chemical injection from the FPSO to each of the subsea wells via combined electro / hydraulic controls / chemical injection umbilicals. A separate umbilical supplies these services in addition to electric power and fibre optic control / communication from the FPSO to the WHP.

The FPSO to WHP umbilical is approximately 1.8 km long. The FPSO to Swift Manifold umbilical is approximately 18 km long. Three additional umbilicals of approximately 5.4 km, 2.5 km and 1.3 km in length supply services to the Skua, Swift North-1 and Swift-2 sites respectively. The umbilical terminations are tied into the subsea trees with flexible jumper assemblies.

2.2 OPERATIONAL ACTIVITIES

The following operational activities are associated with the MDP:

Commissioning: In Q4, 2017, the commissioning and dewatering of a new flowline from the WHP to FPSO riser took place. The majority of other FPSO commissioning activities were completed prior to production commencing in June 2013.

Hydrocarbon processing: The production export flowlines on the WHP and the subsea production import flowlines from the Swift manifold have provision for installing temporary pigging facilities for the purpose of pre-commissioning activities. Pigging is not required for normal operation, but may be used later in field life for corrosion monitoring / management. No discharge of fluids associated with pigging is anticipated as no additional fluid is proposed to be used.

Production fluids from the production wells commingle at the Swift manifold and are transferred to the WHP. Subsea well fluid and Montara well fluid can also be comingled or exported separately to the FPSO via two export flowlines. On the FPSO the production fluids are processed through a three stage separation system into three streams – oil, gas and water. The bulk of the produced water and gas are separated from the oil during the separation process. Gas from the separator is routed to the reinjection gas compression system; oil is routed to the crude oil heater and produced water routed to the produced water degasser. Further gas and water is removed by the second and third stage separators. Oil from second stage separation is routed to the third stage separator where it is pumped by the crude oil rundown pump(s) through crude oil rundown cooler and subsequently to the storage tank.

Gas treatment: Associated gases are routed from the separation process to the reinjection gas compression system. This gas stream is compressed, dehydrated and cooled prior to being used as fuel gas at the FPSO, and lift gas at each well, with the surplus reinjected into the Montara reservoir with a reinjection well on the WHP. Lift gas and reinjected gas is exported from the FPSO via the gas swivel and gas flowline. Dehydration is achieved via a Glycol Contactor located between the second and third stages of the three-stage reinjection compressor.

Produced formation water: PFW is water from underground formations that is brought to the surface during oil or gas production. As the water has been in contact with hydrocarbon bearing formations, it contains some of the chemical characteristics of the formations and the hydrocarbons. It includes chemicals added during the production process.

Bilges: There are three bilge wells in the machinery space which collect oily water drainage from the various items of equipment in the space. These wells are monitored by high level alarms and are manually emptied to the Bilge Holding Tank using the Bilge pump. The Bilge Holding Tank is within the hull and has a capacity of 72 m^3. The contents of the Bilge Holding Tank are discharged to the Starboard Slops Tank for further treatment and discharged via the Produced Water treatment system.

Slops water: Slops water consists of contaminated water from the open and closed drain system as well as tank stripping and washing operations that is collected in Slops tanks on the FPSO. The slops water is treated and discharged via the Produced Water treatment system.

Volatisation of product and venting: A degree of volatisation of the crude oil product occurs while it is held in the FPSO's storage tanks. These volatile organic compounds (VOCs) are contained in the head space within each tank, the volume of which varies as crude oil is transferred into and out of the tanks. The build-up of VOCs, with the inherent risk of combustion, is minimised by the FPSO's inert gas system.

Crude oil storage: Stabilised crude is contained within the FPSO's ten (10) dedicated crude storage tanks with a total capacity of 120,522.3m³ (758,062 barrels) Product is held in these tanks before offloading to export tankers.

Crude oil offloading: Crude oil is offloaded to a commercial off take tanker moored in tandem configuration at the stern of the FPSO. The frequency of off take depends on production rates.

Flaring: Flaring is minimised as produced gas is used as fuel gas, gas lift or re-injected into the gas injection well. In the case of shutdown of the reinjection system, gas is temporarily diverted via flare knock-out (KO) drums to the flare system. Purge gas for the flare headers, required for safety reason and from the glycol system will also be routed to the flare.

Well intervention: Rigless well interventions or workovers may be necessary over the course of field life and the frequency is expected to be in the order of one workover per well per 5 year period. A rigless well intervention is undertaken when changes to the downhole configuration using pressured controlled equipment are required without removal of key barriers. Any well intervention activities will be planned and managed in accordance with the PTTEP AA Montara Well Operations Management Plan (WOMP) (MV-DR-D41-866618) and the DWS370 - Well Integrity Manual (WIM) (D41-504807-WC) procedures. The WHP and its safety and control systems/logic have been designed to permit simultaneous well intervention / servicing with production.

Chemicals and hazardous materials: Chemicals and hazardous materials which are required to operate the facility include chemical injections required at wells and topside facilities, hydrocarbons associated with the processing and storage facilities. naturally occurring radioactive materials (NORMs), and other hazardous materials (fuels, oils, gases, paint thinner, cleaning agents etc.). These chemicals and hazardous materials are stored, handled and disposed in accordance with PTTEP AA's SSHE Management System.

Maintenance: The facility is designed for continuous service with a design life of 20 years. The FPSO vessel, turret and mooring systems are designed to allow all essential maintenance and mandatory inspections to be performed in the field whilst in continuous operation without dry-docking with class notation in-water survey in lieu of dry docking.

2.3 UTILITIES

The following utilities are required to facilitate the operation of the MDP:

- **Power** is generated for the FPSO by two (2) gas turbine driven generators. The gas turbines are dual fuelled units, normally operating on fuel gas produced from the process train but also capable of operating on diesel oil. Hydraulic power, chemical injection, electric power and fibre optic control/ communication are supplied to the WHP via the 1.8 km long subsea umbilical from the FPSO. The subsea umbilical cable also provides fibre optic communications between the WHP and the FPSO. Auxiliary power is provided by the three (3) 800 kW diesel powered generators. A 600 kW emergency generator supplies the emergency switchboard;
- Two (2) **boilers** provide steam. These have been converted to dual fuel, operating normally on fuel gas with the option to operate on diesel oil. The system is designed to 2650 kPag, with normal supply at 2452 kPag. Generated steam is used for driving the cargo discharge pumps, cargo tank heating coils, production heat exchangers and the freshwater generators. The boiler exhaust gas is the source of inert gas used to inert the cargo tanks;
- Two (2) **compressed air systems** provide instrument air on the FPSO;

- A **nitrogen generation package** provides nitrogen for the supply of inert gas to the flare and process facilities. Filtered Instrument air is supplied to the nitrogen generator membrane separators. Using reverse osmosis, two streams of gas are produced: one 95% - 99% pure nitrogen and the other is oxygen rich and vented.
- Two (2) **fresh water generators** provide potable water supplied with seawater from the seawater system. The potable water is supplied to the accommodation for domestic services (via UV sterilizers and clarifiers). Potable water is also supplied to the essential diesel engine expansion tanks, emergency generator room, eye wash and safety shower systems and the utilities water system on deck.
- Two (2) **seawater lift pumps** are installed on FPSO. The seawater from the pumps passes through two (2) manually operated strainers to remove any marine solid particles in the seawater;
- A **sewerage system** including of a Grey Water Collection system and a Black Water Collection system from the accommodation is provided on FPSO. The sewerage treatment package has been sized to cope with the potential for extended POB of 78 personnel. Putrescible waste from the galley is discharged to sea after maceration to a particle size of less than 25mm in accordance with MARPOL. Sewage from a long drop toilet located on the unmanned WHP is contained in a portaloo that is 'exchanged' for a new one when necessary.
- **Waste** consisting of non-hazardous materials is segregated into waste streams and transported back to the mainland where they are either recycled or disposed of at approved facilities. Hazardous waste is assessed case by case. Empty packaging that has previously carried hazardous waste is treated as hazardous waste unless adequate precautions have been taken to ensure that there is no potential for harm to the marine environment, personnel and/or the facility. Storage and handling of mixed class of dangerous goods in packages and intermediate bulk containers and corrosive substances follows the guidelines set in AS/NZS 3833 and 3780 respectively. The transport of hazardous wastes is regulated using the Multimodal Dangerous Goods Form in accordance with MARPOL 73/78 Annex III Regulation 4, and in accordance with State and Territory legislative requirements.
- The MDP will follow the PTTEPAA Montara Development **Emergency Shutdown System** Philosophy (TM-CR-FPS-N-050-00001). The types of shutdown include manual shut down, WHP shutdown, PSD process shutdown, total production shutdown, total facility shutdown and abandon field.

2.4 SUPPORT FACILITIES

The following support facilities are required to facilitate the operation of the MDP:

- **Export tankers** are chartered by the buyer of the crude oil produced from the MDP. Tankers offloading from the FPSO will typically transfer in the order of 650,000 bbl per load. **Only** vessels that meet the facility vetting criteria and final acceptance infield by the offtake pilot are accepted for berthing astern of the FPSO;
- **Aviation support** in the form of fixed wing aeroplanes and helicopters provides the normal means of transporting crew and some freight to and from the FPSO. Fixed wing aeroplanes provide travel from Darwin airport to Mungalalu Truscott Airfield with a helicopter transfer between Mungala Truscott Airfield to the FPSO. On average there are two crew change flights per week plus additional flights on an as-required basis for visitors, maintenance campaigns, non-standard operational activities etc. Aviation fuel is supplied from 2 x 6,000 litre portable fuel tanks located within the bunded laydown area on the FPSO.
- **Supply vessels** run from Darwin to the FPSO, typically once every two to three weeks. In conjunction with the visits to the FPSO, supply boats may visit the WHP approximately once every 3 months to deliver maintenance supplies. Support vessels will be utilised over field life for activities such as inspection, maintenance and remedial works including Remote Operated Vehicle (ROV) inspection of subsea systems. Underwater operations may be carried out using diving or ROV support vessels. Such operations would be conducted by divers or an ROV from a vessel. Diving and/or ROV contractors will be contracted to perform the inspection/intervention work as required.

3 DESCRIPTION OF THE ENVIRONMENT

3.1 INTRODUCTION

The physical, biological and socio-economic environment in and around the project area and the wider region are described in this section, together with the values and sensitivities of the region. The terms used throughout this section with regard to the description of the area are defined as:

- 'MDP Area': refers to the immediate area of the Montara Development Project, and comprises the Montara, Swift, Skua and Swallow fields.
- 'Environment that may be affected (EMBA)': refers to the outer limit of the potential area which may be affected by the MDP and is defined by the area that could potentially be impacted in the event of a hydrocarbon spill. The EMBA is conservatively estimated based upon worst case oil spill modelling. A threshold of 10 g/m^2 has been used to estimate the potential spatial extent of biological impacts from hydrocarbon spills for on water and in water exposure, and 110g/m^2 for shoreline impacts. A surface hydrocarbon threshold of 0.5 g/m^2, which represents a visible oil (rainbow) sheen, has been used to provide an indication of the extent to which stakeholders may visually observe oil on the sea surface. This is considered to provide a more relevant and conservative extent of potential impacts to socio-economic receptors associated with visual amenity. The description of the socio-economic environment in Section 3.5 covers this wider EMBA.

3.2 REGIONAL SETTING

Australia's offshore waters have been divided into six marine regions in order to facilitate their management by the Australian Government under the EPBC Act. The MDP area is located within the North West Marine Region (NWMR), however, the EMBA includes areas within both the NWMR and the North Marine Region (NMR). A summary of each region is provided below.

The NWMR encompasses Commonwealth waters from the Western Australia/Northern Territory border in the north, to Kalbarri in the south. A number of regionally important marine communities and habitats have been identified as part of the NWMR bioregional plan and WA State planning processes. These include Ashmore Reef, Cartier Island, Seringapatam Reef and Scott Reef, which have been identified as regionally important areas supporting a high biodiversity of marine life and supporting foraging and breeding aggregations. Ashmore Reef and Cartier Island are located approximately 160 km and 100 km north-west respectively from the MDP area.

The NMR comprises Commonwealth waters from the west Cape York Peninsula to the Northern Territory–Western Australia border, covering approximately 625,689 km2 of tropical waters in the Gulf of Carpentaria and Arafura and Timor seas. The marine environment of the NMR is known for its high diversity of tropical species but relatively low endemism, in contrast to other bioregions. A number of regionally important marine communities and habitats have been identified as part of the NMR bioregional plan. These include the Gulf of Carpentaria coastal zone, plateaux and saddle north-west of the Wellesley Islands, and the submerged coral reefs of the Gulf of Carpentaria.

3.2.1 Protected Areas

Commonwealth Marine Reserves

Commonwealth marine reserves (CMRs) have been established around Australia as part of the National Representative System of Marine Protected Areas, the primary goal of which is to establish and effectively manage a comprehensive, adequate and representative system of marine reserves to contribute to the long-term conservation of marine ecosystems and protect marine biodiversity. The CMRs located within the EMBA include the following:

- Ashmore Reef Commonwealth Marine Reserve;
- Cartier Island Commonwealth Marine Reserve;
- Mermaid Reef Commonwealth Marine Reserve;
- Kimberley Commonwealth Marine Reserve;

- Argo-Rowley Commonwealth Marine Reserve;
- Oceanic Shoals Commonwealth Marine Reserve;
- Joseph Bonaparte Gulf Commonwealth Marine Reserve;
- Arafura Commonwealth Marine Reserve;
- Arnhem Commonwealth Marine Reserve; and
- Wessel Commonwealth Marine Reserve.

State and Territory Reserves

Eighteen State and Territory reserves are located within the EMBA, including 14 reserves identified in a search of the EPBC Act Protected Matters database:

- Adele Island Nature Reserve (WA)
- Browse Island Nature Reserve (WA)
- Lalang-garram / Camden Sound Marine Park (WA)
- Lalang-garram / Horizontal Falls Marine Park (WA)
- North Kimberley Marine Park (WA).
- Rowley Shoals Marine Park (WA)
- Scott Reef (WA)
- Dambimangari (WA)
- Low Rocks (WA)
- Prince Regent (WA)
- Uunguu - Stage 1 (WA)
- Prince Regent National Park (WA)
- Low Rocks Nature Reserve (WA)
- Unnamed WA41775 WA (Browse island)
- Unnamed WA44673 WA (Adele Island)
- Unnamed WA44674 WA (Adele Island)
- Vernon Islands (NT)
- Garig Gunak Barlu National Park/Cobourg Marine Park (NT)
- Djelk (NT)
- Djukbinj (NT)
- Djukbinj National Park (NT)

Of these reserves, three are Indigenous Protected Areas (IPAs); the Dambimangari IPA, Djelk IPA and Uunguu IPA. The most relevant value and sensitivity within the IPA is traditional fishing, which is practised within these reserves.

Key Ecological Features

Key Ecological Features (KEFs) are components of the Commonwealth marine environment recognised for their regional importance for either the region's biodiversity or ecosystem function and integrity (Commonwealth of Australia 2012). KEFs that are relevant to the MDP area and wider EMBA are summarised in *Table 3.1*.

Table 3.1 Key Ecological Features located within the EMBA (Commonwealth of Australia 2012)

Key Ecological Feature	Values
Ashmore Reef and Cartier Island and surrounding Commonwealth waters	High productivity and aggregations of marine life.
Continental slope demersal fish communities	High levels of endemism
Ancient coastline at 125 m depth contour	Unique seafloor feature with ecological properties of regional significance
Seringapatam Reef and Commonwealth waters in the Scott Reef complex	High productivity and aggregations of marine life
Carbonate bank and terrace system of the Sahul Shelf	Unique seafloor feature with ecological properties of regional significance
Carbonate bank and terrace system of the Van Diemen Rise	Unique seafloor feature with ecological properties of regional significance
Pinnacles of the Bonaparte Basin	Unique seafloor feature with ecological properties of regional significance
Shelf break and slope of the Arafura Shelf	Ecological significance associated with productivity emanating from the slope

Wetlands of conservation significance (declared Ramsar wetlands)

There are no “wetlands of international importance” under the Convention on Wetlands of International Importance (Ramsar Convention), referred to henceforth as Ramsar wetlands, within the MDP area. Within the wider EMBA, Ashmore Reef CMR and the Cobourg Peninsula are designated Ramsar Wetlands.

3.3 PHYSICAL ENVIRONMENT

The MDP area experiences a monsoonal climate with two predominant seasons including a hot wet summer season from October to March and a cool dry winter season from April to September, referred to as the northwest and southeast monsoons respectively. The climate is influenced by two major atmospheric pressure systems: the subtropical ridge of high pressure cells referred to as highs or anticyclones, and a broad tropical low pressure region called the monsoon trough (RPS Metocean 2008). These two major systems create three discrete weather phenomena that influence conditions within the MDP area and wider EMBA:

- The north-west monsoon season, or wet season, occurs from October to March and is characterised by north-west to south-west winds. The monsoon season is generally associated with broad areas of cloud and rain including periods of widespread heavy rainfall;
- Steady north-east to south-east winds (south-east trade winds) from April to September (dry season) caused by development and intensification of anticyclones over south-western Australia, brings predominantly fine conditions with low rainfall in most areas;
- Cyclonic activity occurs between November to April and the drilling area will experience on average three cyclones a year. Cyclones can bring very large amounts of rain, with strong swell and rough seas common during these events.

The oceanographic regime of the north-west Australian offshore area is strongly influenced by the Indonesian Through Flow which transports warm, low salinity, oligotrophic waters through a

complex system of currents, linking the Pacific and Indian Ocean via the Indonesian Archipelago (Department of State Development (DSD) 2010). The strength of the Indonesian Through Flow fluctuates seasonally and reaches maximum strength during the south-east monsoon (May to September) and weakens during the north-west monsoon.

The currents in the MDP area and wider EMBA are influenced by the semi-diurnal tides that have four direction reversals per day. Both the semidiurnal and diurnal tides appear to travel north-eastwards in the deep water leading to the Timor Trough prior to propagation eastwards and southwards across the wide continental shelf. The NWMR experiences some of the largest tides along a coastline adjoining an open ocean in the world.

3.4 BIOLOGICAL ENVIRONMENT

3.4.1 Benthic Habitat and Communities

The benthic habitats in the MDP area and wider EMBA are generally dominated by soft sediments, sand and mud, with occasional patches of coarser sediments. A benthic habitat assessment was undertaken in the area of Petroleum Production Licence AC/L7 during the 2010 wet season, which included the Montara field and surrounding areas (ERM 2011). Benthic habitats surveyed were characterised by homogenous, flat, featureless soft sediment; predominately comprised of sand with small rubble/shell fragments and marked by low relief ripples with evidence of bioturbation. Sparse patches of epifauna were recorded and included hydroids, octocorals (soft corals, gorgonians and seapens), black corals and ascidians.

Macrobenthic faunal assemblages surveyed had a generally low and highly patchy abundance of individuals. Polychaete bristleworms from the Phylum Annelida contributed the highest relative abundance of macrobenthic assemblages across the surveyed area (abundance ranging from approximately 40 to 60%); followed by Malacostracan crustaceans (shrimps, crabs etc.) (approximately 13 to 19%). Gastropoda was represented by 33 taxa across the surveyed area with abundance ranging from approximately 0.5 to 5%.

Soft sediment habitats are expected to be broadly similar in the wider EMBA to the surveyed locations in the Montara field and surrounding areas. In a study of benthic habitats on the continental shelf near the Big Bank Shoals (approximately 200 km to the northeast of the MDP area) by Heyward *et al*. (1997), the predominant benthic infaunal species were polychaetes (burrowing worms) and crustaceans (prawns, shrimp, crabs, etc.).

Given the large regional area associated with EMBA, a large number of different benthic communities occur within this area. These habitats include banks, shoals, coral reefs and seagrasses.

Banks and Shoals

A study by Heyward *et al.* (2010) identified more than 20 possible shoal features (defined as abrupt submerged features rising from deeper than 50 m) within a 100 km radius of the MDP area and greater than 100 similar bathymetric features within 200 km. The nearest shoals to the MDP area are Goeree and Vulcan Shoals, located approximately 30 km to the southwest. Other shoals in close proximity to the MDP area include Eugene McDermott Shoal (approximately 45 km south) and Barracouta Shoal (approximately 60 km northwest).

Due to their remote location, most of the shoals in the region are either understudied or poorly characterised. The benthic environments of the few shoals that have been surveyed in some detail, including Vulcan and Barracouta Shoals, provide an indication of shoal habitats present in the region and are discussed in this section. In general, the bank and shoal systems in the region support diverse biological communities including corals, sponges, seagrasses and a variety of reef fish, with dominant organisms ranging from the macroscopic alga *Halimeda* to soft and hard coral communities (Heyward et al. 1997).

Coral Reef Communities

No coral reefs were identified within the MDP. Coral reefs in the EMBA can be categorised into two general groups: fringing reefs around coastal islands and the mainland shore and large platform reefs, banks and shelf edge atolls offshore.

Coral reefs within the MDP include Ashmore Reef, Cartier Island, Seringapatam Reef, and Scott Reef. These reefs, in particular Ashmore Reef, are recognised as having the highest richness and diversity of coral species in Western Australia (Mustoe and Edmunds 2008, cited in DSD 2010).

Seagrass

There is no seagrass within the MDP area due to water depth and lack of suitable habitat. Within the broader EMBA, seagrasses occur along the mainland coastline of the Northern Territory and Western Australia and within the protected coastal areas of islands, including the Tiwi Islands, outer Darwin Harbour and in the waters surrounding of the Van Diemen Gulf adjacent to Arnhem Land (Roelofs et al. 2005). The largest known seagrass locations for the NWMR have been reported from around the Buccaneer Archipelago located north of the Dampier Peninsula (Wells et al. 1995). The regionally dominant genera are *Halophila* and *Halodule* (Duke et al. 2010).

3.4.2 Shoreline Habitats

There are many islands that occur within the NWMR and NMR. There is no emergent land within the MDP area; however, extensive coastline and numerous small islands are present within the EMBA. Shoreline habitat types in the region include mangrove systems, sandy beaches, tidal mud flats and rocky reef/limestone platforms, which are described below and are widely distributed.

Mangrove systems provide complex structural habitats that act as nurseries for many marine species as well as nesting and feeding sites for many birds and reptiles. Mangroves also maintain sediment, nutrient and water quality within habitats and minimise coastal erosion. Mangrove communities make up a common shoreline habitat along the Northern Territory and Western Australian coastlines with extensive mangrove communities along the Kimberley, Joseph Bonaparte, Tiwi Islands and Arnhem Land coastlines.

Sandy beaches are located throughout the region and some are considered significant habitat for turtles and seabirds, with turtle and seabird nesting occurring above the high tide line. Generally, sands are highly mobile and therefore do not support a high level of biodiversity. Fauna within sandy beach habitats usually consists of polychaete worms, crustaceans and bivalves. These fauna provide a valuable food source for resident and migratory sea and shorebirds (DEC/MPRA 2005). Natural processes tend to supply fresh sediments and larval stock with each tidal influx.

Tidal mud flats are located throughout the region. They support a high density of benthic invertebrates and are considered to provide important nursery habitats for fish and crustaceans. The invertebrates that are found in tidal mud flat habitats are key sources of food for shorebirds. The tidal mudflats along the Kimberley coastline are also known to provide important habitats for migratory shorebirds.

Rocky reefs and limestone platforms are located along the Kimberley and Northern Territory coastlines. The majority of the limestone platforms are surrounded by an extensive reef system. Rocky reefs and limestone platforms support a high diversity of benthic filter feeders and primary producers.

Green, hawksbill and loggerhead turtles are known to forage for seagrass and algae within rocky reefs (DEWHA 2008). Rocky reefs also provide foraging habitats for dugong within the Darwin area of the Northern Territory.

Indonesia and Timor Leste

The Indonesian coastline is rich in tropical marine ecosystems such as sandy beaches, mangroves, coral reefs and seagrasses ecosystems (Hutomo and Moosa, 2005). These are home to a wide variety of living communities and a high species diversity and richness.

Mangrove forests in Indonesia account for 76% of the total mangroves found in the Southeast Asian Region.

The best environment for growth of sea grass is considered to be the sandy reef flats that occur in sheltered areas in the low tidal ranges. Wide areas of the Indonesian coastal waters are covered by dense beds of seagrass. Pioneering vegetation in the intertidal zone is dominated by *Halophila ovalis* and *Halodule pinifolia* while *Thalassodendron ciliatum* dominate the lower subtidal zones.

Indonesia has an estimated 75,000 km^2 coral reef ecosystem distributed throughout the archipelago (Tomascik *et al*. 1997 cited in Hutumo and Moosa, 2005). Fringing reefs are the most common reef types with scleractinian corals as being the most dominant and important group. It is estimated that Indonesian waters are home to 452 species of hermatypic scleractinian coral and 590 species of scleractinian corals (Tomascik *et al 1997,* cited in Hutumo and Moosa, 2005*;* Suharsono 2004, cited in Hutumo and Moosa, 2005).

As part of the Montara oil spill in 2009, PTTEP AA and APASA developed a set of detailed aerial imagery and habitat mapping for the Indonesian and Timor coastlines. In the unlikely event of a hydrocarbon spill, with a trajectory towards these coastlines, this data will be used to identify sensitive areas. Below provides a snapshot of the shoreline habitats along the Indonesian coastline.

The Java and Bali Province is rich in tropical marine ecosystems such as mangroves, coral reefs, seagrasses and seaweeds, sand beaches on the east coast of Java and rocky coasts on the south-eastern coast of Bali. The mangrove forests provide a valuable physical habitat for a variety of important coastal species such as crabs, shrimps, fishes, and commercial fishes. Turtles are commonly seen at Crystal bay.

Maluku Province's inshore waters are rich in mangroves, seagrass beds and coral reefs habitats for dugongs, green turtle, reef fish, shark, giant clam, trochus (Moss and Van Der Wal 1998).

West Nusa Tengarra Province consists of two islands: Lombok Island and Sumbawa Island. Mangroves, seagrass beds and coral reefs exist in the surrounding waters of Lombok (Atmadja 1992 cited in Tomascik *et al*. 1997). It has been noted that fishermen in the west coast of Lombok collect seagrass from mixed seagrass meadows (Atmadja 1992 cited in Tomascik *et al.* 1997). Green turtles and dugong likely feed on the seagrass beds located on the west coast of Lombok and north coast of Sumbawa.

The Timor Leste coastline features mangrove communities surrounding entrance to rivers primarily on the south coast, whilst the north and eastern coast feature a higher degree of coral reef communities.

Below lists out the shoreline habitats that are present in the East Nusa Tengarra Province and Timor Leste:

- Rote Island features mangrove communities with sparse patches of seagrass habitats and high abundance of coral reef communities.
- The Savu sea region has an abundance of coral reef habitats that act as nurseries and feeding grounds for whales and dolphins. In particular Savu and Raidjua Islands are surrounded by a fringing coral reef community. Savu Island features a small area of seagrass located in the north east corner of the Island.
- Sumba Island is surrounded by a fringing coral reef community, with sparse patches of seagrass and mangrove communities around the island.
- The majority of the West Timor coastline features a narrow fringing coral reef community with four dense areas of mangrove communities occurring primarily along the south coast.
- Pulau Dana the southernmost island of Indonesia is surrounded by exposed reefs and is known to be inhabited by a large number of bird species and nesting turtles.
- Alor is an island that located at the border between Indonesia and Timor Leste with mangroves, coral reefs and seagrasses.
- The majority of the Pulau Semau coastline features a narrow fringing coral reef community with areas of mangrove and seagrass communities occurring primarily along the east coast.

3.4.3 Marine Fauna

Species of conservation significance

Species of conservation significance under the EPBC Act with the potential to occur within the MDP area and the broader EMBA have been identified for the Plan. Species were identified through a search of the EPBC Act Protected Matters Search Tool (PMST), on 27 March 2017. Searches identified 18 threatened and 29 migratory species as potentially occurring within the MDP area, while 60 threated and 69 migratory species may potentially occur within the EMBA described above. Biologically Important Areas (BIAs) associated with species of conservation significance within the EMBA have been identified and a summary of this information is provided below.

Table 3.2 and Table 3.3 below present species listed as threatened and/or migratory under the EPBC Act. Table 3.2 lists species that have the potential to occur within the MDP area (based on a search of a 20 km radius from the Montara H5 ST-2 well location), while Table 3.3 presents additional species that have the potential to occur within the EMBA.

Table 3.2 EPBC Listed Threatened and/or Migratory Species potentially occurring within MDP area

Species Name	Common Name	EPBC Threatened Status	Migratory	Likelihood of Occurrence
Marine Mammals				
Balaenoptera borealis	Sei Whale	Vulnerable	Migratory	Sei whales *(Balaenoptera borealis)* are a cosmopolitan species, found in the waters off all Australian states (DoEE 2017). Based on the cosmopolitan distribution of the species, sei whales may be encountered in low numbers within the MDP area. Individuals of the species may be encountered within the EMBA, although large numbers are unlikely.
Balaenoptera musculus	Blue Whale	Endangered	Migratory	Blue whales (*Balaenoptera musculus*) are widely distributed throughout the worlds' oceans. There are two subspecies in the Southern Hemisphere: the southern blue whale (*Balaenoptera musculus intermedia*) and the pygmy blue whale (*Balaenoptera musculus brevicauda)* (DEWHA 2008). In general, the southern blue whale is found south of 60° S and pygmy blue whales are found north of 55° S (DEWHA 2008), making it highly likely that any blue whales frequenting the waters of the MDP area and EMBA would be pygmy blue whales. The MDP area does not include any recognised blue whale migratory routes or known feeding, breeding or resting areas. However, low numbers of blue whales migrating to and from Indonesian waters may occasionally pass through the MDP area, most likely during the southern migration (October to November) (DoEE 2017). The EMBA overlaps with the pygmy blue whale migratory route BIA off the Kimberley Coast (Figure 3.2). Blue whale activities occurring within the area of the BIA overlapping with the EMBA include migration, foraging, and 'distribution'.
Balaenoptera physalus	Fin Whale	Vulnerable	Migratory	Fin Whales (*Balaenoptera physalus)* are found in the waters all around Australia, including Tasmania, and the waters of the Australia Antarctic Territory (DoEE 2017). The Australian Antarctic waters are also thought to be important feeding grounds for fin whales, while feeding has been observed in the Bonney Upwelling area indicating the area to be of importance as a feeding ground for the species. Based on the cosmopolitan distribution of the species, fin whales may be encountered in low numbers within the MDP area. Individuals of the species may be encountered within the EMBA, although large numbers are unlikely.

Species Name	Common Name	EPBC Threatened Status	Migratory	Likelihood of Occurrence
Balaenoptera bonaerensis	Antarctic Minke Whale	N/A	Migratory	Antarctic Minke Whales (*Balaenoptera bonaerensis*) are known from the waters of all states with the exception of the Northern Territory, however the distribution along the west Australian coast is poorly delineated (DoEE 2017). The species' distribution is primarily in cold, southern Antarctic waters, and given no specific breeding or feeding grounds are known from the MDP area, as well as activities occurring outside of migration periods, the species is not expected to be encountered in significant numbers within the MDP area. Isolated individuals may be encountered within the EMBA.
Balaenoptera edeni	Bryde's Whale	N/A	Migratory	Bryde's Whales (*Balaenoptera edeni*) are a cosmopolitan species, found in the waters of all Australian states, including both Christmas and the Cocos Islands (DoEE, 2017). Ambient noise monitoring conducted in the Southern, Cash-Maple and Oliver permits by JASCO (2012) over a 12 month period between December 2010 and December 2011 recorded whale calls that were attributed to Bryde's whales year round at all three permits, with no seasonal cycle observed. This data demonstrates that individuals may be encountered within the MDP area and are also likely to occur within the EMBA.
Megaptera novaeangliae	Humpback Whale	Vulnerable	Migratory	Humpback whales (*Megaptera novaeangliae*) have a wide distribution, having been recorded from the coastal areas off all Australian states other than the Northern Territory (Bannister et al. 1996). Given the MDP area is situated north of the northern-most point of the humpback whale migration it is considered unlikely that the species will be encountered. Individuals may be encountered within the wider EMBA.
Orcinus orca	Killer Whale	N/A	Migratory	Killer Whales (*Orcinus orca*) are a cosmopolitan species, found in the waters off all Australian states in oceanic, pelagic and neritic regions, in both warm and cold waters (DoEE 2017). Given the lack of known migration routes or areas of significance in the region, the species is not expected to be encountered in either the MDP area or EMBA in significant numbers.
Physeter macrocephalus	Sperm Whale	N/A	Migratory	Sperm Whales (*Physeter macrocephalus*) have been recorded from the waters of all Australian states (DoEE 2017). Given the shallow water depths at the MDP area (<100 m), and the lack of upwellings or sharp bathymetric contours, it is unlikely that the species will be encountered in significant numbers. Isolated individuals may be encountered within the EMBA.
Tursiops aduncus (Arafura/Timor Sea populations)	Spotted Bottlenose Dolphin	N/A	Migratory	The spotted bottlenose dolphin (*Tursiops aduncus*) is generally considered to be a warm water subspecies of the common bottlenose dolphin (*Tursiops truncates*) and known to exist in waters off all Australian states. Due to the distance from the coast and deeper waters of the MDP area, spotted

Species Name	Common Name	EPBC Threatened Status	Migratory	Likelihood of Occurrence
				bottlenose dolphins are not expected to occur, particularly given the preference for shallower, coastal waters. Given their cosmopolitan distribution, the species may be encountered within the EMBA.
Marine Reptiles				
Caretta caretta	Loggerhead Turtle	Endangered	Migratory	The closest known Loggerhead turtle breeding/nesting grounds to the MDP area are found at Muiron Island and the beaches of the Northwest Cape (Baldwin et al. 2003), approximately 1,500 km south-west of the MDP area and outside the EMBA. Loggerhead turtles have been recorded in the reserves of Ashmore Reef and Cartier Island, approximately 100 km northwest of the MDP area (Guinea 1995). Loggerhead turtles are unlikely to be encountered within the MDP area in significant numbers. This species is likely to be present, in limited numbers, within the wider EMBA. The EMBA intersects with one loggerhead turtle BIA, a foraging area, on the Sahul Bank, off Northern Territory waters (Figure 3.1). No loggerhead turtle BIAs are intersected by the MDP area.
Chelonia mydas	Green Turtle	Vulnerable	Migratory	Green turtles (*Chelonia mydas*) are found in tropical and subtropical waters. Green turtles may occasionally pass through the MDP area. However, due to the water depths the area does not provide foraging habitat. The closest known significant breeding/nesting grounds to the MDP area are the Ashmore Reef and Cartier Island CMRs, approximately 160 and 110 km to the northwest of MDP area, respectively. The EMBA intersects green turtle BIAs at Scott, Ashmore and Cartier Reefs, in the Joseph Bonaparte Gulf, and around Melville Island, with the areas used for foraging, internesting, and nesting. Green turtle BIAs in the region are illustrated in Figure 3.1.
Dermochelys coriacea	Leatherback Turtle	Endangered	Migratory	The Leatherback turtle (*Dermochelys coriacea*) has the widest distribution of any marine turtle, and can be found in tropical, subtropical and temperate waters throughout the world (Marquez 1990). Nesting occurs on tropical beaches and subtropical beaches but no major centres of nesting activity have been recorded in Australia, although scattered isolated nesting (1-3 nests per annum) occurs in southern Queensland and Northern Territory (Limpus and McLachlin 1994). As such, it is expected that very few leatherback turtles will be encountered in the MDP area. The species is likely to be present within the wider EMBA.

Species Name	Common Name	EPBC Threatened Status	Migratory	Likelihood of Occurrence
Eretmochelys imbricata	Hawksbill Turtle	Vulnerable	Migratory	Hawksbill turtles (*Eretmochelys imbricata*) are found in tropical, subtropical and temperate waters in all oceans of the world. There are no known nesting or breeding areas in or near the MDP area. Due to the distance from nesting sites and the lack of foraging habitats in the MDP area, only low numbers of hawksbill turtles are expected to be observed, in transit from WA to the NT. The species is likely to be present within the wider EMBA.
Lepidochelys olivacea	Olive Ridley Turtle	Endangered	Migratory	The olive ridley turtle (*Lepidochelys olivacea*) has a circum-tropical distribution, with nesting occurring throughout tropical waters. This species may be encountered, in limited numbers within the wider EMBA. The EMBA intersects with a number of olive-ridley turtle BIAs (foraging and internesting areas), the Sahul Bank in the Joseph Bonaparte Gulf, and in Northern Territory waters off the Arnhem Land coast (Figure 3.1). No loggerhead turtle BIAs are intersected by the MDP area.
Natator depressus	Flatback Turtle	Vulnerable	Migratory	The flatback turtle (*Natator depressus*) is found in the tropical waters of northern Australia, Papua New Guinea and Irian Jaya. Due to their migrations between the Pilbara and the Kimberley regions of WA, individual flatback turtles may transit the MDP area during migration. However, given the distance from known aggregation areas, it is unlikely that significant numbers of flatback turtles will be encountered within the MDP area. Due to the water depths the area does not provide foraging habitat. The species will also be present within the wider EMBA and the timing of proposed drilling activities overlaps with the breeding season at nesting beaches in the EMBA.
Sharks, Sawfish and Rays				
Carcharodon carcharias	Great White Shark	Vulnerable	Migratory	The Great White Shark (*Carcharodon carcharias*) is widely, but sparsely, distributed in all seas, having been recorded from central Queensland around the south coast to north-west WA (DoEE 2017). Given a preference for cooler southern waters, great white sharks are considered unlikely to be encountered in either the MDP area or EMBA.
Glyphis garricki	Northern River Shark	Endangered	N/A	Northern River Sharks (*Glyphis garricki*) are known to inhabit rivers, tidal sections of large tropical estuarine systems, macrotidal embayments, as well as inshore and offshore marine habitats (DoEE 2017). Given the offshore location of the MDP area, it is unlikely that the species will be encountered, although habitat occurs within the wider EMBA.
Isurus oxyrinchus	Shortfin Mako	N/A	Migratory	The shortfin mako (*Isurus oxyrinchus*) and the longfin mako (*Isurus paucus*) are both offshore epipelagic species found in tropical and warm-temperate waters (DoEE 2017).
Isurus paucus	Longfin Mako	N/A	Migratory	

Species Name	Common Name	EPBC Threatened Status	Migratory	Likelihood of Occurrence
				Both species occur in Australia in coastal waters off WA, NT, QLD and NSW at depths ranging from shallow coastal waters to at least 500m (DoEE 2017). These species may migrate through the MDP area, and may be found within the wider EMBA.
Manta alfredi	Reef Manta Ray	N/A	Migratory	The reef manta ray (*Manta alfredi*) is commonly sighted inshore, but also found around offshore coral reefs, rocky reefs and seamounts, tending to inhabit warm tropical or sub-tropical waters (Marshall *et. al.* 2011). Based on the species' habitat preferences it is unlikely that the giant manta ray will be encountered in the MDP area. Given the EMBA overlaps with a number of coral and rocky reefs in the region, it is possible that the species may be encountered within the EMBA.
Manta birostris	Giant Manta Ray	N/A	Migratory	The giant manta ray (Manta birostris) inhabits tropical, marine waters worldwide, between latitudes 30°N and 35°S. The species is commonly sighted along productive coastlines with regular upwelling, oceanic island groups, particularly offshore pinnacles and seamounts. Nearer to shore the giant manta ray is commonly encountered on shallow reefs while being cleaned or is sighted feeding at the surface inshore and offshore. Based on the species' habitat preferences it is unlikely that the giant manta ray will be encountered in the MDP area. Given the EMBA overlaps with a number of coral and rocky reefs in the region, it is possible that the species may be encountered within the EMBA.
Pristis Pristis	Freshwater Sawfish	Vulnerable	Migratory	The freshwater sawfish (*Pristis pristis*) may occur in all large rivers of northern Australia from the Fitzroy River in Western Australia, to the western side of Cape York Peninsula, Queensland, although is mainly confined to the primary channels of large rivers (DoEE 2017). Based on the distribution, and preferred habitat of the species, it is considered unlikely that freshwater sawfishes will be found at the MDP area. Given the species' known distribution individuals are likely to be found within the EMBA.
Pristis zijsron	Green Sawfish	Vulnerable	Migratory	In Australian waters, green sawfishes (*Pristis zijsron*) have been recorded in the coastal waters off Broome, Western Australia, around northern Australia to Jervis Bay, New South Wales (NSW) (DoEE 2017). Based on the offshore, deeper-water project location, and the species' preference for turbid, inshore water, it is unlikely green sawfishes will be encountered in the MDP area. Based on the known distribution of the species, individuals are likely to exist within the EMBA.
Rhincodon typus	Whale Shark	Vulnerable	Migratory	Whale sharks (*Rhincodon typus*) are listed as Vulnerable and Migratory under the EPBC Act. They are not known to feed or breed in the MDP area; however, whale sharks may

Species Name	Common Name	EPBC Threatened Status	Migratory	Likelihood of Occurrence
				occur in the MDP area due to their widespread distribution and highly migratory nature, albeit in very low numbers. The MDP area is located within the northernmost section of the migratory BIA for the whale shark (Figure 3.1). Given the species migrates south to Ningaloo reef to feed during coral spawning, occurring in March/April, it is unlikely that whale sharks will be encountered in significant numbers in the MDP area or wider EMBA during drilling operations given the timing of proposed drilling activities.
Avifauna				
Anous tenuirostris melanops	Australian Lesser Noddy	Vulnerable	N/A	The Australian lesser noddy (*Anous tenuirostris melanops*) is usually only found around its breeding islands including the Houtman Abrolhos Islands and on Ashmore Reef and Barrow Island in WA (DoEE 2017). Given the distribution of the species and the breeding population at nearby Ashmore Reef and Cartier Island, this species may be present in the MDP area, although only in low numbers. Based on known distribution and the location of rookeries the species is known to occur within the EMBA.
Anous stolidus	Common Noddy	N/A	Migratory	In Australia, the common noddy (*Anous stolidus*) occurs mainly in oceanic waters off the Queensland coast, although is also known from the north-west and central Western Australia coast. Based on the distribution and habitat preferences the species may be encountered within the MDP area, and occurs within the EMBA.
*Calidris ferruginea**	Curlew Sandpiper	Critically Endangered	Migratory	In Australia, Curlew Sandpipers *(Calidris ferruginea*) occur around the coasts and are also quite widespread inland. Given the offshore location of activities and habitat preferences, the species is unlikely to be encountered within the MDP area other than occasional numbers during migration, although may be present within the EMBA.
Calonectris leucomelas	Streaked Shearwater	N/A	Migratory	The streaked shearwater (*Calonectris leucomelas*) is usually found over pelagic waters, and is known to breed on the coast and offshore islands mainly around Japan and Korea (Ochi et al 2010). Given the distribution of streaked shearwaters, this species may be present in the MDP area during operations, albeit in low numbers and will occur within the EMBA.
Fregata ariel	Lesser Frigatebird	N/A	Migratory	The lesser frigatebird (*Fregata ariel)* is considered as the most common and widespread frigatebird over Australian seas (Lindsey 1986). A BIA has been identified for this species at Ashmore Reef and Cartier Island to highlight breeding and foraging behaviours in the area (DoEE 2017). The MDP does not over overlap with this BIA, however the BIA overlaps with the wider EMBA. Given its distribution and the large breeding population at nearby Ashmore Reef and Cartier, this species may be encountered within the MDP area, and will be present within the EMBA.
Fregata minor	Great	N/A	Migratory	Great frigatebirds (*Fregata minor)* are found in tropical waters globally. A BIA has been

Species Name	Common Name	EPBC Threatened Status	Migratory	Likelihood of Occurrence
	Frigatebird			identified at Ashmore Reef and Cartier Island for the species to highlight breeding and foraging behaviours in the area (DoEE 2017). The MDP area does not overlap with this BIA, however the BIA overlaps with the EMBA. Given the distribution of the species and its low population in nearby Ashmore Reef and Cartier Island, this species may be present in the MDP area in low numbers, and will be present within the EMBA.
*Numenius madagascariensis**	Eastern Curlew	Critically Endangered	Migratory	Within Australia, the eastern curlew (*Numenius madagascariensis*) has a primarily coastal distribution. The species nests in the Northern Hemisphere from early May to late June and does not breed in Australia. During the non-breeding season in Australia, the eastern curlew is most commonly associated with sheltered coasts, especially estuaries, bays, harbours, inlets and coastal lagoons, with large intertidal mudflats or sandflats. Given the offshore location of activities and habitat preferences, the species is unlikely to be encountered within the MDP area other than occasional numbers during migration, although may be present within the EMBA.

* It is noted that these are migratory shorebird species and activity within the MDP area will be limited to migration.

Table 3.3 Additional Threatened and Migratory Species potentially occurring within the EMBA

Species Name	Common Name	EPBC Threatened Status	Migratory	Likelihood of Occurrence
Mammals				
Dugong dugon	Dugong	N/A	Migratory	Dugongs (*Dugong dugon*) are protected under the Wildlife Conservation Act 1950 (WA) and are listed as migratory under the EPBC Act. Ashmore Reef is considered a BIA for dugongs due to the foraging opportunities afforded by the seagrass beds present. Although there is limited information on the presence of dugongs in deeper offshore waters, such as the MDP area, the absence of seagrass beds upon which the species grazes suggests that their presence is unlikely. Given the known distribution of the species, dugongs are likely to be found within the EMBA.
Orcaella heinsohni	Irrawaddy Dolphin	N/A	Migratory	The Irrawaddy dolphin (*Orcaella heinsohni*) (listed under the EPBC Act as *Orcaella brevirostris)* occurs around the northern coast of Australia between approximately Broome and the NSW/Qld border (DoEE 2017). Within WA, the species has been found in the shallow coastal waters and estuaries along the Kimberley coast (DoEE 2017). Given their cosmopolitan distribution, the species may be encountered within the EMBA; although a search of the PMST did not list this species as occurring within the MDP area.
Sousa sahulensis/ Sousa chinensis	Indo-Pacific Humpback Dolphin	N/A	Migratory	The Indo-Pacific humpback dolphin (*Sousa sahulensis*) (listed under the EPBC Act as *Sousa chinensis*) occurs along the northern coastline of Australia from NSW on the east coast to approximately Shark Bay on the WA coastline (DoEE 2017). Given their cosmopolitan distribution, the species may be encountered within the EMBA; a search of the EPBC PMST did not list this species as occurring within the MDP area.
Reptiles				
Aipysurus apraefrontalis	Short-nosed Seasnake	Critically Endangered	N/A	Short-nosed sea snakes (*Aipysurus apraefrontalis*) are endemic to Western Australia. Given the preference of the species for shallow reef areas, short-nosed seasnakes are considered unlikely to be encountered within the MDP area. As the species is known from Ashmore reef the species is likely to be found within the EMBA.
Aipysurus foliosquama	Leaf-scaled Seasnake	Critically Endangered	N/A	Leaf-scaled sea snakes (*Aipysurus foliosquama*) are found only on the reefs of the Sahul Shelf in WA, especially on Ashmore and Hibernia Reefs (DoEE 2017). Based on the lack of preferred habitat for the species within the MDP area, it is considered unlikely that the

Species Name	Common Name	EPBC Threatened Status	Migratory	Likelihood of Occurrence
				species will be encountered. Given the species is known from Ashmore and Cartier Reefs the species is likely to be found within the EMBA.
Crocodylus porosus	Salt-water Crocodile	N/A	Migratory	The saltwater crocodile (*Crocodylus porosus*) is found in Australian coastal waters, estuaries, lakes, inland swamps and marshes. Distribution ranges from Rockhampton in Queensland, throughout coastal Northern Territory to King Sound (near Broome) in Western Australia. Movement patterns are not well known, but the movements of relocated animals demonstrate their ability to make long distance movements (up to 280 km) (Walsh and Whitehead 1993). The species may be encountered in coastal habitats within the EMBA; a search of the EPBC PMST did not list this species as occurring within the MDP area.
Sharks Sawfishes, and Rays				
Anoxypristis cuspidata	Narrow Sawfish	N/A	Migratory	Narrow sawfishes (*Anoxypristis cuspidate)* were not recorded in a PMST search of the MDP area, although identified as potentially occurring in the EMBA. The species is bentho-pelagic inhabiting estuarine, inshore and offshore waters to at least 40 m depth (IUCN 2017). Inshore and estuarine waters are critical habitats for juveniles and pupping females, while adults occur predominantly offshore (IUCN 2017). Based on the species' habitat preference it is highly unlikely to be found within the MDP area, although it may be encountered within certain areas of the EMBA.
Glyphis glyphis	Speartooth Shark	Critically Endangered	N/A	Speartooth sharks (*Glyphis glyphis*) were not recorded in a PMST search of the MDP area, although identified as potentially occurring in the EMBA. The shark is reported to occur in northern Australian waters and in waters off New Guinea. In Australia, the speartooth shark has so far only been recorded in tidal rivers and estuaries within the Northern Territory and Queensland. Based on the species' habitat preference it is highly unlikely to be found within the MDP area, although individuals may be encountered within certain areas of the EMBA.
Pristis clavata	Dwarf Sawfish	Vulnerable	Migratory	Dwarf sawfishes (*Pristis clavata)* are thought to be distributed along the northern coast of Australia from Cairns, in Queensland to the Pilbara coast in Western Australia. The species usually inhabits shallow (2–3 m) coastal waters and estuarine habitats (DoEE 2017). Based on the species' habitat preference it is highly unlikely to be found within the MDP area, although may be encountered within certain areas of the EMBA.

Species Name	Common Name	EPBC Threatened Status	Migratory	Likelihood of Occurrence
Avifauna				
Calidris tenuirostris	Great Knot	Critically Endangered	N/A	A number of terrestrial species were identified in the PMST search conducted for the EMBA; given these species are terrestrial and non-migratory these have not been included in this assessment.
Charadrius leschenaultii	Greater Sand Plover	Vulnerable	N/A	
Charadrius mongolus	Lesser Sand Plover	Endangered	N/A	
Limosa lapponica baueri	Bar-tailed Godwit	Vulnerable	N/A	
Limosa lapponica menzbieri	Northern Siberian Bar-tailed Godwit	Critically Endangered	N/A	
Rostratula australis	Australian Painted Snipe	Endangered	N/A	
Phaethon lepturus	White-tailed Tropicbird	N/A	Migratory	
Phaethon rubricauda	Red-tailed Tropicbird	N/A	Migratory	
Puffinus pacificus	Wedge-tailed Shearwater	N/A	Migratory	
Sterna albifrons	Little Tern	N/A	Migratory	
Sterna anaethetus	Bridled Tern	N/A	Migratory	
Sterna caspia	Caspian Tern	N/A	Migratory	
Sterna dougallii	Roseate Tern	N/A	Migratory	
Sula tylatra	Masked Booby	N/A	Migratory	
Sula leucogaster	Brown Booby	N/A	Migratory	
Sula sula	Red-footed Booby	N/A	Migratory	

Biologically Important Areas

Biologically Important Areas (BIAs) have been identified, described and mapped for protected species under the EPBC Act through the marine bioregional planning program. BIAs are spatially and temporally defined areas or regions where species protected under the EPBC Act display biologically important behaviours, such as breeding, foraging, resting or migration, based on the most current and robust scientific information. They are therefore areas of particular importance for the conservation of protected species.

BIAs associated with species that may occur within the EMBA and are listed under the EPBC Act are presented in Table 3.3.2 and Figure 3.1-3.3.

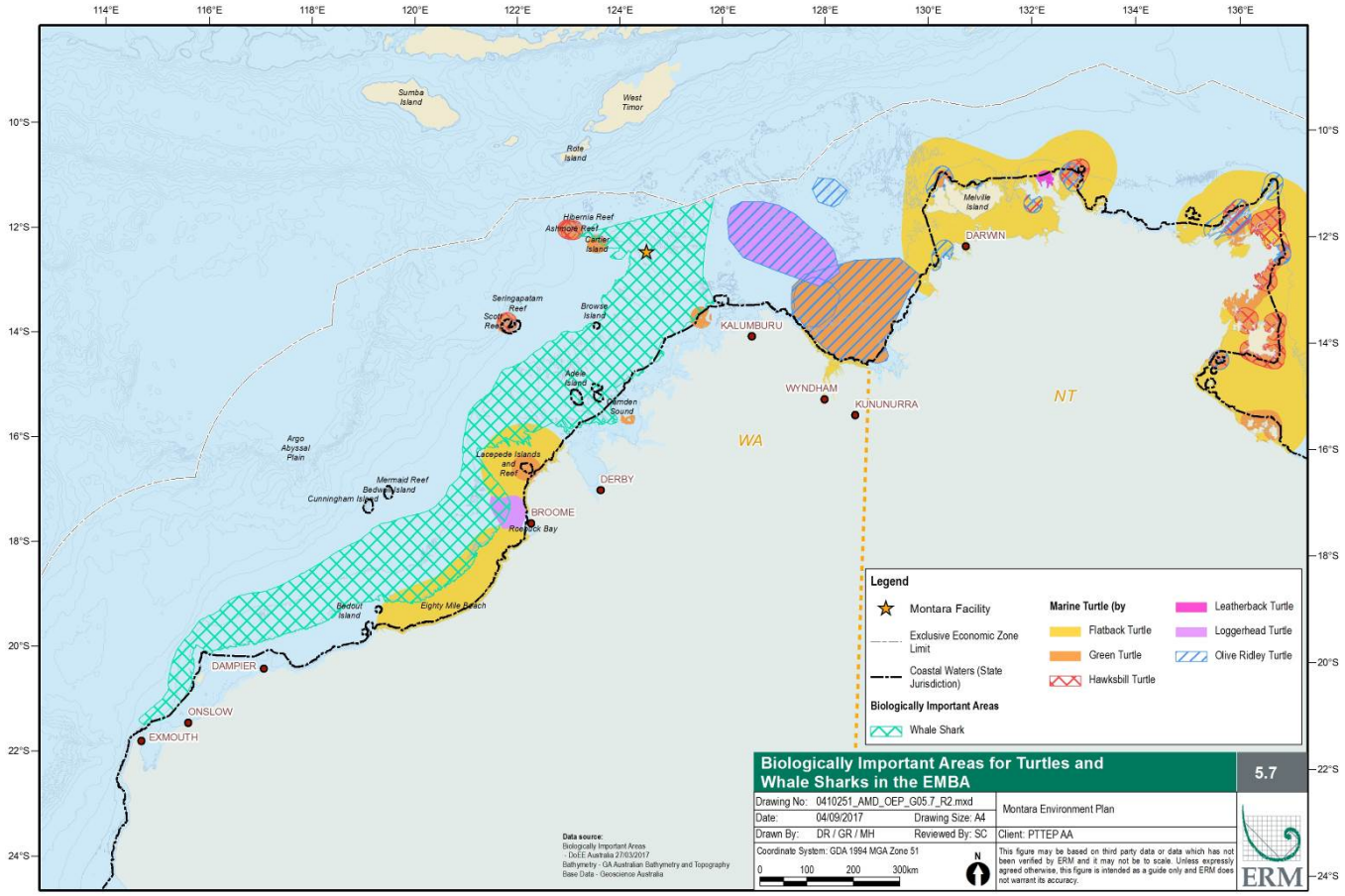

Figure 3.1 Biologically Important Areas for Turtles and Whale Sharks in the EMBA

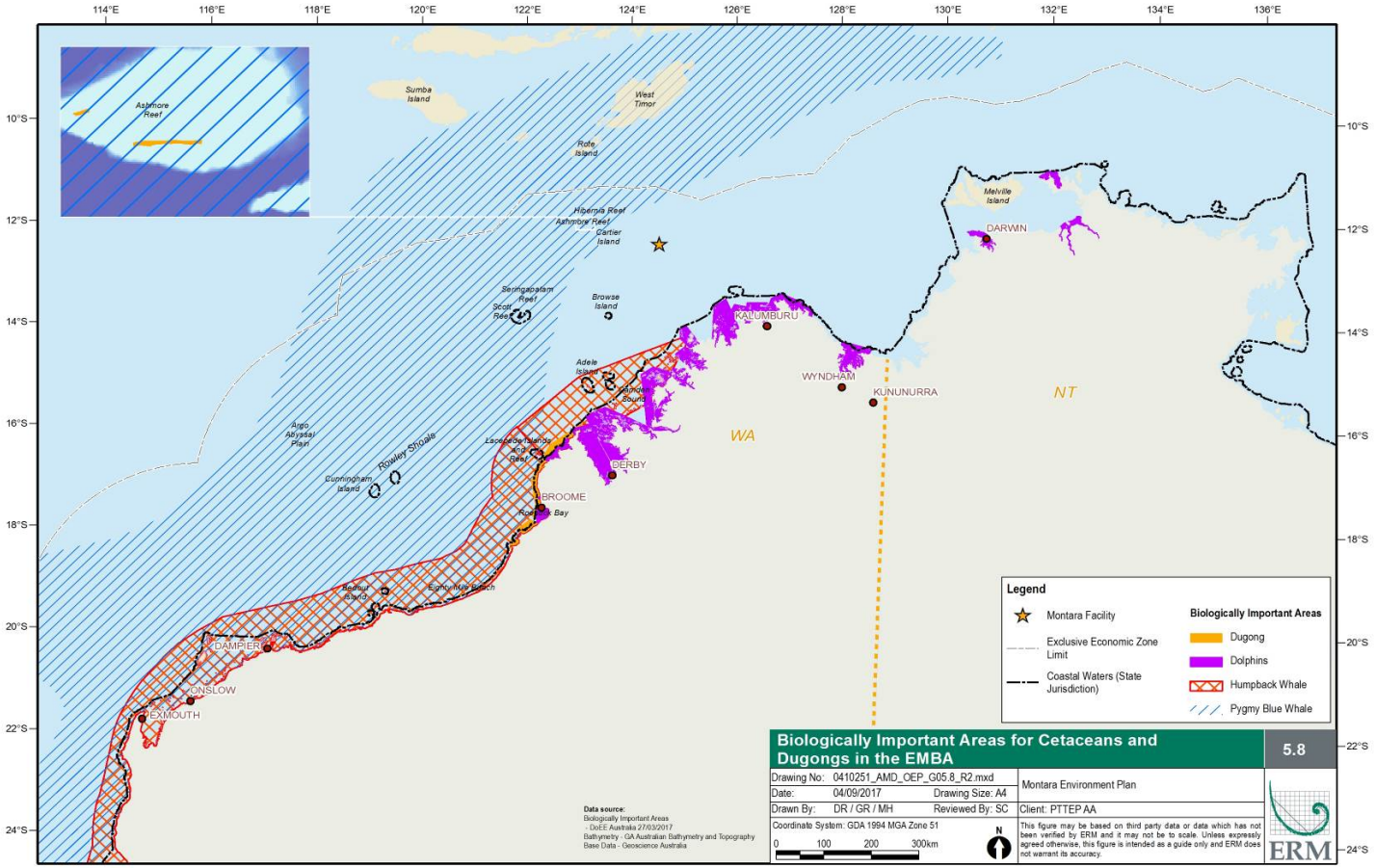

Figure 3.2 Biologically Important Areas for Cetaceans and Dugong in the EMBA

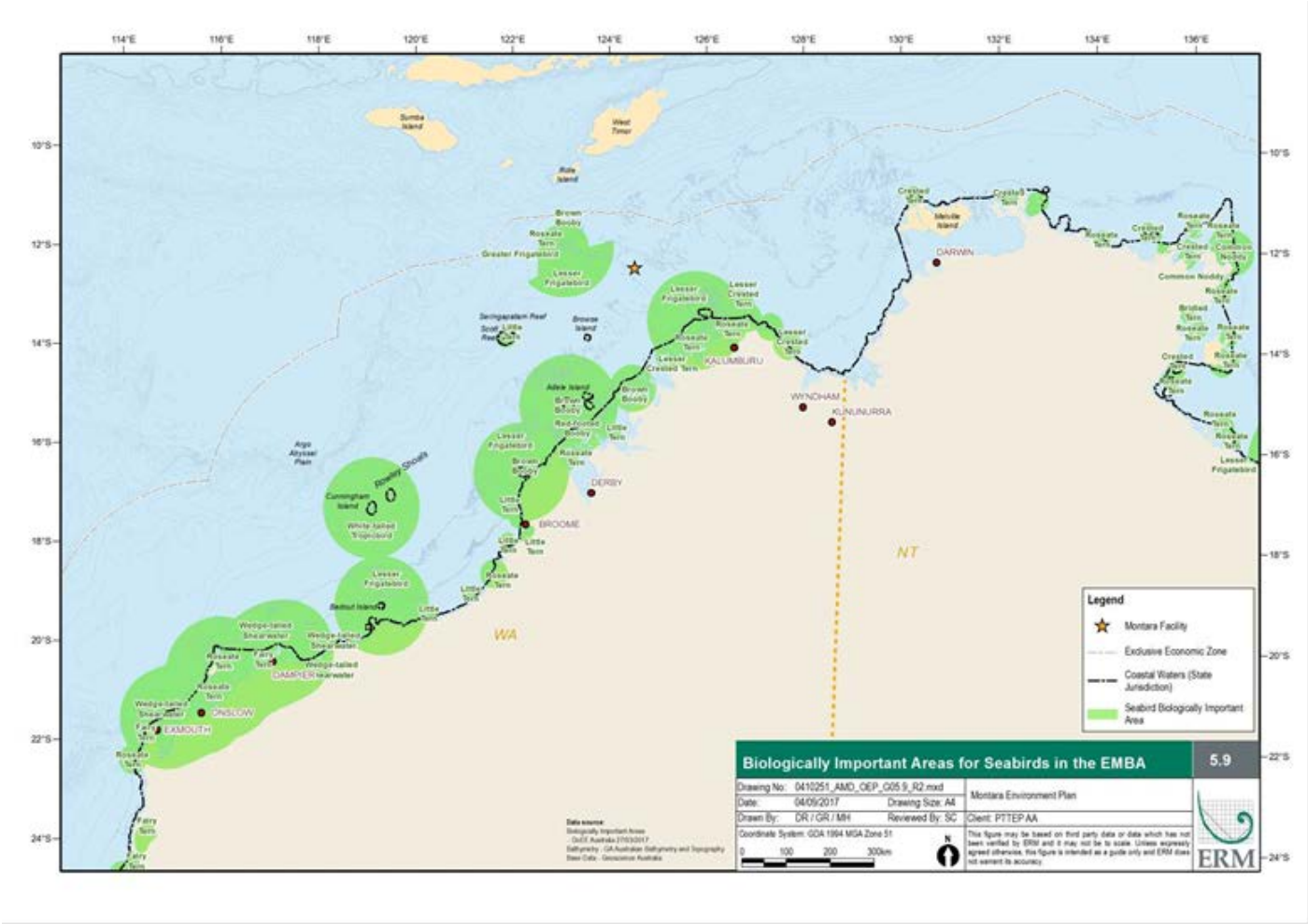

Figure 3.3 Biologically Important Areas for Seabirds in the EMBA

3.5 SOCIO-ECONOMIC AND CULTURAL ENVIRONMENT

3.5.1 Indigenous Heritage

There are no known Indigenous heritage sites within the MDP area and surrounds (DAA 2017).

3.5.2 Non-Indigenous Heritage

There are no national heritage places or areas of archaeological significance within, or in the immediate vicinity of, the MDP area and surrounds.

Within the EMBA, *West Kimberley* is listed on the National Heritage List, and *Ashmore Reef National Nature Reserve*, *Mermaid Reef – Rowley Shoals*, *Seringapatam Reef and Surrounds* and *Scott Reef and Surrounds* are listed on the Commonwealth Heritage List and are registered on the Register of the National Estate. The Ashmore Reef National Nature Reserve is also listed as a RAMSAR Wetland. The portion of Scott Reef within Commonwealth waters is listed as a Commonwealth Heritage Place. Sandy Islet, East Hook and the intertidal reef flat of south Scott Reef are included as an area of 'reserved land' (formerly 'C' Class Nature Reserve) which is vested in the WA Conservation Commission.

There are no known historical shipwrecks in the MDP area and surrounds. The closest shipwreck is the *Ann Millicent*, an iron hulled barque of 944 tons, which was wrecked on Cartier Island on 5 January 1888.

The Komodo National Park in Indonesia is a world heritage site and is within the furthest extent of the EMBA. It is located between the islands of Sumbawa and Flores and consists of volcanic islands with fringing coral reefs. The marine fauna and flora are generally the same as that found throughout the Indo Pacific area, though species richness is very high (UNESCO, 2017). Komodo National Park is managed by the central government of Indonesia through the Directorate General of Forest Protection and Natural Conservation of the Ministry of Forestry.

3.5.3 Defence Activities

The EPBC Protected Matters search identified three Defence sites: Mount Goodwin Radar Site, Quail Island Bombing Range, and Rimbija Island RAAF Radio Beacon. However, these sites are all onshore and are therefore not expected to be impacted by project activities.

3.5.4 Commercial Fisheries

The north coast of Western Australia (Pilbara/Kimberley) and the Northern Territory support a number of commercial fisheries (Department of Agriculture, Fisheries and Forestry (DAFF), 2013; AFMA, 2016). The Commonwealth-managed and State/Territory-managed fisheries that overlap with the MDP area or may be present within the wider EMBA are listed in Table 3.4.

Table 3.4 Commercial Fisheries that may overlap with the MDP or be present in the wider EMBA

Management Area	Fishery
Commonwealth-Managed Fisheries	• Northwest Slope Trawl Fishery • Western Tuna and Billfish Fishery • Western Skipjack Tuna Fishery • Southern Bluefin Tuna Fishery • Northern Prawn Fishery

Management Area	Fishery
Western Australia State-Managed Fisheries	• Abalone Fishery • Beche-de-Mer (Trepang) Fishery • Broome Prawn Managed Fishery • Northern Demersal Scalefish Fishery • Northern Shark Fishery • Kimberley Prawn Managed Fishery • North Coast Nearshore and Estuarine Fishery • Mackerel Managed Fishery • Pearling Oyster Managed Fishery • West Coast Deep Sea Crustacean Managed Fishery • Marine Aquarium Fish Managed Fishery • Specimen Shell Managed Fishery • North Coast Crab Fishery • Kimberley Developing Mud Crab Fishery • Kimberley Gillnet and Barramundi Fishery • Nickol Bay Prawn Fishery • Onslow Prawn Fishery • Pilbara Line Managed Fishery • Pilbara Trap Managed Fishery • Pilbara Fish Trawl Fishery • Trochus Fishery
Northern Territory-Managed Fisheries	• Beche-de-Mer (Trepang) Fishery • Barramundi Fishery • Coastal Line Fishery • Coastal Net Fishery • Offshore Net and Line Fishery • Spanish Mackerel Fishery

3.5.5 Traditional and Subsistence Fisheries

Along the north-western coastline of Australia, traditional and subsistence fishing is generally limited to shorelines, creeks and nearshore reefs (LeProvost Dames and Moore 1997). Customary fishing occurs in the Dambimangari IPA, Djelk IPA and Uunguu IPA. The importance of customary fishing in WA and NT is to recognise Aboriginal cultural heritage and needs.

Australia and Indonesia have entered into a number of agreements and arrangements relating to the maritime area between Australia and Indonesia including the i) Memorandum of Understanding between the Government of Australia and the Government of the Republic of Indonesia Regarding the Operations of Indonesian Traditional Fishermen in Areas of the Australian Exclusive Fishing Zone and Continental Shelf, 7 November 1974 (the MOU) and ii) Treaty between the Government of Australia and the Government of the Republic of Indonesia establishing an Exclusive Economic Zone Boundary and Certain Seabed Boundaries (Perth, 14 March 1997) (1997 Perth Treaty) that has been signed but is not yet in force.

3.5.6 Tourism and Recreational Activities

The MDP area is located in offshore waters that are not likely to be accessed for tourism activities (e.g. recreational fishing and boating and charter boat operations). Such activities tend to be focussed around nearshore waters, islands and coastal areas and will therefore occur within the wider EMBA.

3.5.7 Petroleum Exploration and Production

Oil and gas exploration activities in the Indian Ocean off WA commenced in the late 1960s. There are a number of oil and gas companies holding petroleum permits in the vicinity of the MDP area. The closest current activity is Talbot oil field (AC/RL1 retention license), currently under development, as a tie back operation to Puffin, operated by Sinopec in Joint Venture with AED Oil. Other proponents in the Timor Sea are at various stages of appraisal, planning and approval in advance of Final Investment Decision.

3.5.8 Ports and Commercial Shipping

The majority of the major commercial shipping through the Timor Sea passes well to the north of the MDP area. The Darwin Port is the supply base for the activity, approximately 692 km west of the MDP area. PTTEP AA has a materials/logistics support base in Darwin that will be used to service the proposed activities. The Darwin Port services the Kimberley Region of Western Australia. The deepwater port is the import and distribution destination for most cargoes used in the oil and gas industry in the Arafura Sea, Timor Sea and waters off the coast of Western Australia.

3.5.9 Summary of Values and Sensitivities

A summary of values and sensitivities within the EMBA including Australian jurisdiction and Indonesian/Timor Leste jurisdiction is provided in Table 3.5 and Table 3.6 respectively.

Table 3.5 Summary of values and sensitivities within the EMBA in Australian Jurisdiction

Values and Sensitivities		Sensitive Habitats within the EMBA															
		Adele Island	Browse Island	Scott Reef North	Scott Reef South	Sandy Islet	Seringapatam Reef	Cartier Island	Ashmore Reef	Hibernia Reef	Tiwi Islands	Joseph Bonaparte Gulf	Christmas Island	Camden Sound	Vernon Islands	Kimberley Coast and Offshore Islands	NT Coast and Offshore Islands
Marine fauna	Cetaceans	✓		✓	✓	✓	✓	✓	✓	✓		✓	✓	✓		✓	✓
	Dugongs							✓	✓							✓	✓
	Marine turtles (including nesting sites)		✓	✓	✓	✓		✓	✓		✓	✓		✓		✓	✓
	Sea snakes	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓					✓	
	Sharks, sawfish and rays	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓		✓	
	Seabirds	✓	✓			✓		✓	✓	✓	✓	✓	✓	✓		✓	✓
Benthic communities	Submerged reefs and shoals		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓				
Intertidal sensitivities	Coastal reefs and shoals		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Sandy beaches	✓	✓			✓	✓	✓	✓			✓	✓	✓	✓	✓	✓

Values and Sensitivities		Sensitive Habitats within the EMBA															
		Adele Island	Browse Island	Scott Reef North	Scott Reef South	Sandy Islet	Seringapatam Reef	Cartier Island	Ashmore Reef	Hibernia Reef	Tiwi Islands	Joseph Bonaparte Gulf	Christmas Island	Camden Sound	Vernon Islands	Kimberley Coast and Offshore Islands	NT Coast and Offshore Islands
Intertidal and subtidal benthic primary producers	Mangroves										✓	✓		✓	✓	✓	✓
	Seagrasses			✓	✓		✓	✓	✓							✓	
Fisheries	Commercial	✓	✓					✓	✓	✓		✓				✓	
	Traditional Indonesian			✓	✓		✓	✓	✓								
	Recreational			✓	✓		✓	✓	✓	✓	✓	✓		✓	✓	✓	✓
Protected areas	Commonwealth Marine Reserve							✓	✓			✓					
	State and Territorial Reserve	✓	✓										✓	✓	✓		
	KEFs		✓	✓	✓	✓	✓	✓	✓			✓					

Table 3.6 Summary of values and sensitivities within the EMBA in Indonesian/Timor Leste Jurisdiction

Values and Sensitivities		Sensitive Habitats within the EMBA					
		Indonesian Jurisdiction				Timor Leste Jurisdiction	
		East Nusa Tengarra Province	Maluku Province	West Nusa Tengarra Province	Java and Bali Province	West Timor	East Timor
Marine fauna	Cetaceans	✓	✓	✓	✓	✓	✓
	Dugongs	✓	✓	✓	✓	✓	✓
	Marine turtles (including nesting sites)			✓	✓		✓
	Sea snakes		✓	✓	✓	✓	✓
	Sharks, sawfish and rays	✓	✓	✓	✓	✓	✓
	Seabirds	✓	✓	✓	✓	✓	✓
Benthic communities	Submerged reefs and shoals	✓	✓	✓	✓	✓	✓
Intertidal sensitivities	Coastal reefs and shoals	✓	✓	✓	✓	✓	✓
	Sandy beaches	✓	✓	✓	✓	✓	✓
Intertidal and subtidal benthic primary producers	Mangroves	✓	✓	✓	✓	✓	✓
	Seagrasses	✓	✓	✓	✓	✓	✓
Fisheries	Commercial	✓	✓	✓	✓	✓	✓
	Traditional Indonesian	✓	✓	✓	✓	✓	✓
	Recreational	✓	✓	✓	✓	✓	✓

4 ENVIRONMENTAL RISK ASSESSMENT METHODOLOGY

4.1 INTRODUCTION

As described in Section 1, the EP originally approved in 2013 was revised (in part) on the request of NOPSEMA following an inspection in March 2017. As part of the update PTTEP AA revisited the risk assessment for a small number of risks and impacts and therefore used the current PTTEP AA environmental risk assessment methodology for the reassessment, namely:

1. Hydrocarbon Spill: Loss of well control – Crude – Maximum 236,349 m^3,
2. Spill Response Strategies (as detailed within the Montara Operations Oil Pollution Emergency Plan (MV-HSE-D30-811606);
3. Discharges to the Marine Environment: Produced Formation Water, and
4. Discharges to the Atmosphere: Release of emissions from flaring.

The remainder of the potential environmental risks and impacts are presented in a manner consistent with the previously approved 2013 Montara Operations EP.

Consequently, this EP reflects two environmental risk assessment methodologies, the first being the process as it was applied to most of the environmental risks and impacts in the 2013 EP (as detailed in this section), and the second methodology as applied to the above-mentioned four potential environmental risks and impacts that were revised for this EP (as detailed in Attachment A).

In parallel to developing this EP, PTTEP AA is currently also conducting a comprehensive 5-year review of the Montara Operations EP for submission to NOPSEMA in early 2018. Therefore, this EP will have a validity period between December 2017 and the point in time in which the fully revised EP is approved in 2018.

The environmental risk assessment process, as defined in the PTTEP AA SSHE Risk Management Procedure, is comprised of several stages as follows:

- Hazard Identification process, including:
  - Identifying specific tasks associated with the activity;
  - Understanding the existing environment; and
  - Identifying which aspects of the activity could cause a potential environmental impact.
- Qualitative Analysis, including:
  - Identifying potential hazards associated with each aspect of the activity;
  - Identification and evaluation of appropriate Control Measures in relation to the overall context of the activity;
  - Assess predicted residual risk (with the application of Control Measures);
  - Demonstration of ALARP; and
  - Determination of risk acceptability.

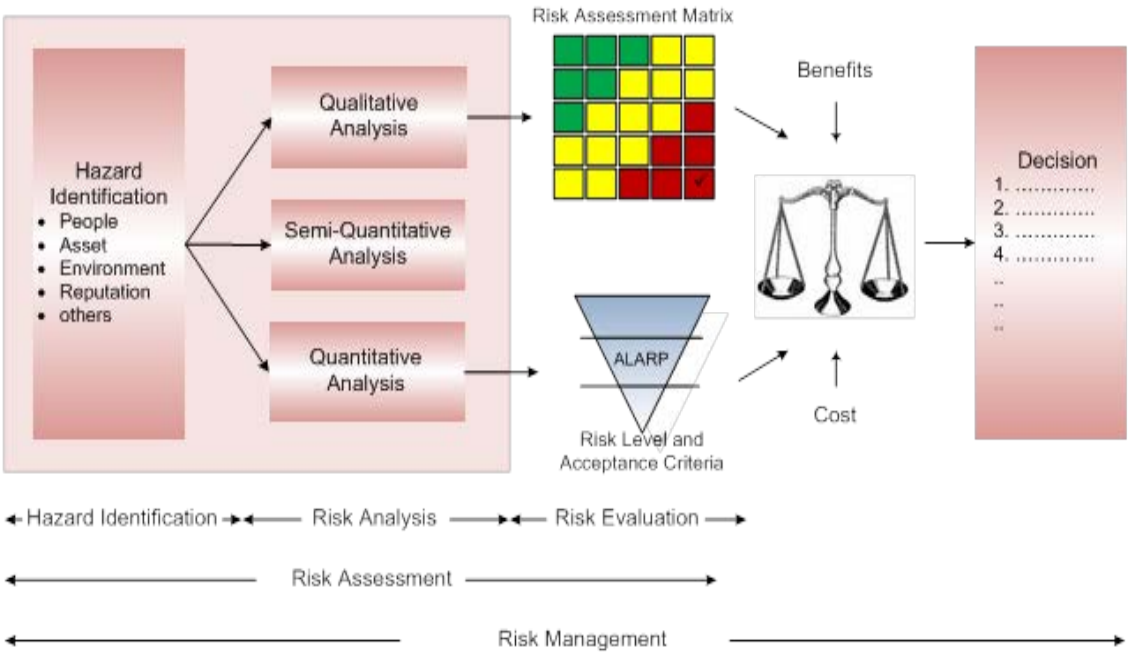

Figure 4.1 Risk Assessment Process

4.1.1 Exclusions

This section describes the methodology for assessing the potential environmental risks and impacts that are specific to the activities set out in the EP, except for:

- Hydrocarbon Spill Loss of well control – Crude – Maximum 236,349 m^3,
- Spill Response Strategies (as detailed within the Montara Operations Oil Pollution Emergency Plan (MV-HSE-D30-811606);
- Discharges to the Marine Environment: Produced Formation Water, and
- Discharges to the Atmosphere: Release of emissions from flaring.

For the above aspects, the risk assessment methodology is described in Attachment A. The above risks and impacts have been assessed using an updated environmental risk assessment methodology originally developed in 2017 for the PTTEP AA H5 Montara Production Drilling Environment Plan.

4.2 RISK ASSESSMENT PROCESS

4.2.1 Risk Assessment Workshop and Supporting Studies

The EP builds on a number of environmental hazard identification activities and risk assessment (ENVID) workshops undertaken in 2012 and 2013. These activities have been undertaken by a core team of experienced environmental consultants and professional staff in PTTEP AA. The risk assessment section has been refined with recent scientific studies (Section 5), improved knowledge of receptors and revised hydrocarbons spill trajectory modelling (Section 5) which allow for the potential impacts from spill scenarios to be quantified.

4.2.2 Risk Assessment Methodology

The environmental risk assessment methodology used, as shown in Figure 4.1, is based on PTTEP AA's risk management process as outlined in the SSHE Risk Management Procedure (M10-501965-CORP). The primary objective of SSHE Risk Management is to ensure that the

hazards, to which people, environment and asset are exposed, are systematically identified, risks are evaluated and measures for reducing them to levels that are ALARP are put in place, documented and maintained. The PTTEP AA risk management process has been developed with reference to Australian Standards, specifically AS/NZS ISO 31000:2009 (AS/NZS 2009).

The risk assessment methodology is described in the sections below.

4.2.3 Hazard Identification

The hazard identification involves the identification of potential sources of risk (i.e. activities) which could cause potential impacts and receptors which may be impacted.

4.2.4 Potential Sources of Risk

Activities associated with the MDP were reviewed to identify the potential effects that they could have on the environment. A systematic assessment of the impact that these effects could have, arising from either planned (i.e. routine) or unplanned events (i.e. non-routine leaks and spills) associated with the various activities, upon environmental, socio-economic and cultural receptors, was then undertaken.

The assessment considered normal and emergency conditions, including, for example, the occurrence of cyclones.

4.2.5 Aspects and Receptors

The following aspects of the environment were identified from the hazard identification process to have the potential to affect the environment:

- Discharges to the marine environment (includes all substances identified as potentially entering the water column, such as planned discharges of produced formation water, cooling water, brine discharge, macerated food waste and sewage, and the potential for unplanned discharges such as spills/ leaks);
- Waste generation and disposal (this includes garbage, packaged wastes, hazardous wastes, but not macerated food wastes intentionally discharged to sea and considered as a discharge to the marine environment);
- Physical presence of the FPSO, WHP and support vessels;
- Atmospheric emissions; and
- Environmental noise.

For each of these aspects the environmental, cultural and social receptors that could be potentially impacted were identified. These include:

- Ecological: Benthic communities, shoals, reefs, islands, marine flora, fish, marine reptiles, marine megafauna and seabirds; and
- Socio-economic: Heritage, protected areas, commercial, recreational and traditional fishing and commercial shipping.

4.2.6 Qualitative Analysis (Risk Assessment Matrix)

The qualitative analysis component assesses the aspects and receptors using a risk matrix (see Table 4.1). Two key factors underpin the qualitative environmental risk assessment process:

- The likelihood of the resources (i.e. sensitive receptors) at risk being impacted based upon knowledge/historical data of similar events/incidents occurring within PTTEP AA or in the exploration and petroleum industry as a whole; and
- The severity of the consequences of the impact.

The qualitative analysis process evaluates the likelihood and the consequences of the impacts upon a receptor. This process facilitates the assessment of controls potentially applicable to the

activity that poses a potential hazard to potential receptors, and of measures to mitigate the severity of the impact, arising from either planned or unplanned events. The process provides critical input into the evaluation of controls and mitigation measures that ensures that the level of risk posed by a particular activity to a sensitive receptor is reduced to ALARP.

The level of risk for each activity is also determined which establishes the potential consequence of an impact on an environmental, social or cultural receptor resulting from the aspect. The likelihood of the consequence occurring is then assigned. The assigned consequence and likelihood is mapped on the risk matrix to determine the level of risk. PTTEP AA's Risk Assessment Matrix is detailed in Table 4.1. Further definition of the risk ratings and potential environmental impacts, including the level of severity, are presented in Table 4.2.

4.3 IDENTIFICATION OF ACTIVITIES WHICH COULD CAUSE POTENTIAL IMPACTS

4.3.1 Assessment of Consequence of Potential Impacts

In evaluating the level of consequence of a potential event, the following factors have been considered (see Table 4.1):

- Extent of impacts: Whether the impact affects the local or wider regional environment;
- Frequency and duration of the impact: How often the impact will occur and how long it will interact with the receiving environment; and
- Sensitivity of the receiving environment: Nature, importance (local, national or international significance) and the sensitivity or resilience to change of the receptor that could be affected.

4.3.2 Likelihood of Impact Occurrence

The likelihood (probability or frequency) of an impact occurring takes into account the effective implementation of mitigation measures. The likelihood of the top level event occurring that could give rise to the impact is based upon knowledge/historical data of similar events/incidents occurring within PTTEP AA or in the industry as a whole. Definitions of likelihood are detailed in the risk assessment matrix (see Table 4.1).

4.2.3 Determining the Residual Risk

The residual risk is determined by assessing the environment, cultural and social consequences and the likelihood of that consequence occurring with additional mitigation measures in place. The residual risk is an indication of significance of an environmental, cultural or social impact. The risk ratings used are provided in Error! Reference source not found..

4.2.4 ALARP and Acceptability

For qualitative or semi quantitative evaluation of risk, the PTTEP AA Risk Assessment Matrix is used.

The PTTEP AA approach to the low, medium and high residual risk levels is shown in Figure 4.2 and outlined below.

Risk Acceptance Criteria

- Low residual risk (i.e. green): Acceptable level of risk utilising standard industry practice to control the risk. The activity also meets legislative requirements, regulator expectations and industry guidelines. The implementation of additional risk reduction measures is not reasonably practicable as is disproportionate to the benefit obtained.
- Medium residual risk (i.e. yellow): Acceptable level of risk if risk reduction is impractical or cost disproportionate to improvement gained. May require additional controls to be considered to reduce the risks and impacts to ALARP. Industry best practice is considered for the risk assessment and a cost benefit analysis (CBA) to reduce the risk may be undertaken.

- High residual risk (i.e. red): Unacceptable level of risk without the use of industry best practice and the implementation of industry benchmarking, local and international guidelines/ standards and stakeholder engagement. Possible risk reduction measures shall be evaluated until it is demonstrated that residual risk is acceptable or within ALARP. A cost benefit analysis (CBA) to reduce the risk may be undertaken and will consider risk reduction measures until the cost of any further risk reduction measures are disproportionate to the improvement gained. CEO approval and sign off is required for the activity to proceed.

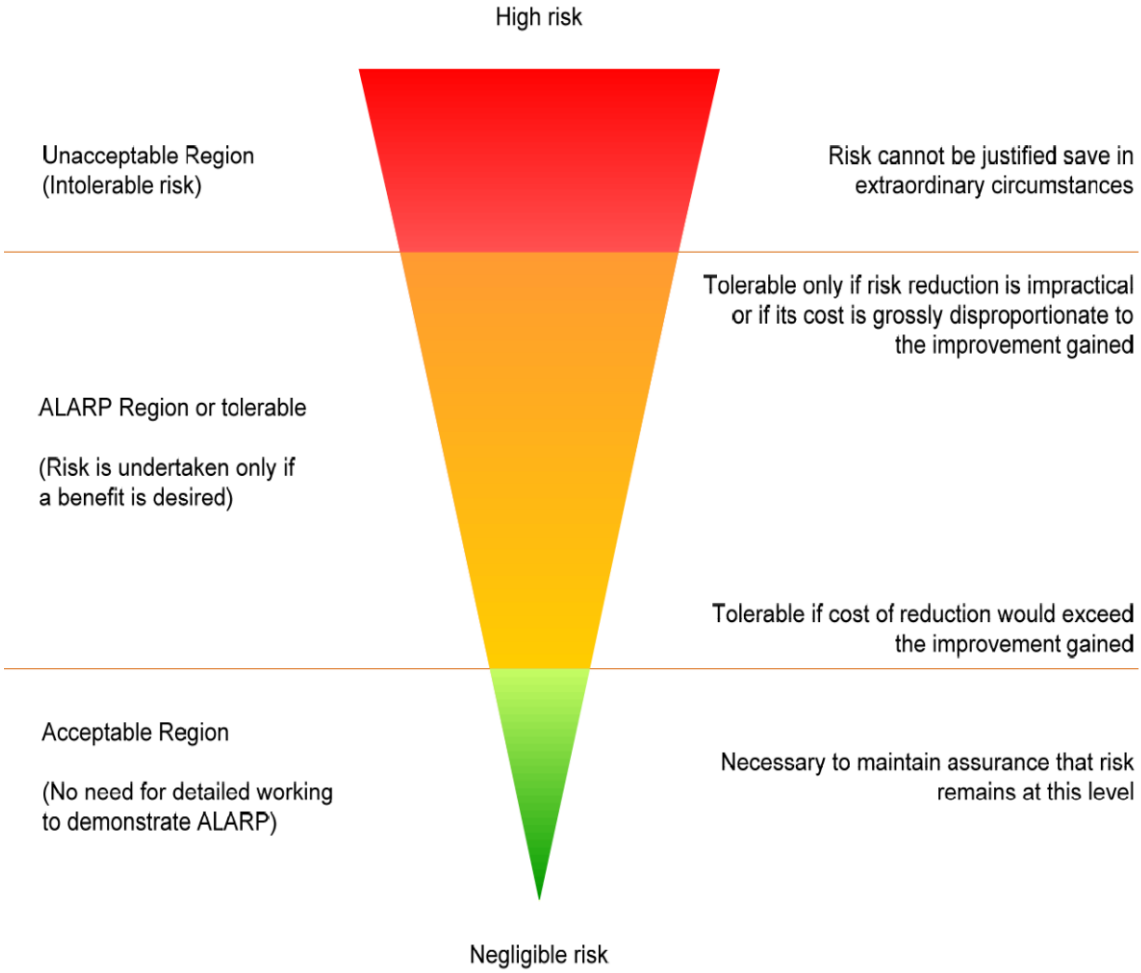

Figure 4.2 Risk Assessment Criteria (Source: SSHE Risk Management Procedure (M10-501965-CORP)

Demonstration of ALARP

ALARP means that risk reduction measures are applied until the cost of incorporating any additional risk reduction measures is disproportionate to the benefit obtained.

Demonstration of ALARP is necessary whether quantitative, qualitative or semi-quantitative methods are used for risk evaluation.

The risk levels in the yellow region (Medium Risk) require consideration of further risk reduction measures in order to achieve ALARP. Reduction of risk to ALARP is an essential process of risk management and was the method adopted for the qualitative risk assessments undertaken.

PTTEP AA has reviewed all of the management and mitigation measures and considers them to be appropriate to manage the potential impacts. The review methods were conducted in a manner consistent with accepted risk management standards (AS/NZS ISO 31000:2009) and took into account nature, scale and location of the activity and accepted industry practice.

Table 4.1 Risk Assessment Matrix

Risk Assessment Matrix									
Consequences					Frequency of Occurrence (chance of event occurring per year)				
					Rare (1) 1 in 10,000-100,000/ year	Unlikely (2) 1 in 1,000-10,000/ year	Credible (3) 1 in 100-1,000/ year	Likely (4) 1 in 10-100/ year	Frequent (5) 1 in 1-10/ year
Severity	**People**	**Production/ Property**	**Environmental Effect**	**Reputation**	**Event occurrence is remote and/ or never heard of in the E&P industry**	**Event occurrence is possible but rare in the E&P industry**	**Event has occurred in the Australian Industry (APPEA)**	**Event often occurs in the Australian Industry (APPEA)**	**Events are frequent in the company (PTTEP AA)**
Catastrophic (E)	Multiple fatalities	Loss > 50M AUD	Tier 3 (> 1,000 tonnes) International assistance	International TV International papers					
Major (D)	Single fatality Multiple LTI with disabilities	Loss between 10M – 50M AUD	Tier 2 (10-1,000 tonnes) Regional assistance	National TV National papers				**HIGH RISK**	
Serious (C)	Single LTI or Multiple ADI	Loss between 1M – 10M AUD	Tier 1 (Up to 10 tonnes) Any Spill > 80 Litres Localised effect	Local TV Local written media			**MEDIUM RISK**		
Moderate (B)	MTC, Single ADI	Loss between 50K - 1M AUD	Any Spill < 80 Litres Minor effect	Local media interest		**LOW RISK**			
Minor (A)	No or minor injury with First Aid	Loss < 50K AUD Insignificant	Spill contained on board No effect	No reaction					

Low Risk	Medium Risk	High Risk
Broadly acceptable	Risk reduction measures required to achieve ALARP	PTTEP AA CEO approval required to continue

Table 4.2 Qualitative Measures of Consequence: Effect to Environment

Number	Description
Minor (A)	Minor Effect - Minor environmental damage, within the fence and within systems or vicinity of the installation. No or negligible financial consequences.
Moderate (B)	Moderate Effect - Sufficiently large contamination or discharge to damage the environment, but no lasting effect. Single breach of statutory or prescribed limit, or single complaint.
Serious (C)	Localised Effect - Limited discharges affecting the neighbourhood and damaging the environment. Repeated breaches of statutory or prescribed limit, or many complaints.
Major (D)	Major Effect - Severe environmental damage. The company is required to take extensive measures to restore the damaged environment. Extended breaches of statutory or prescribed limits, or widespread nuisance.
Catastrophic (E)	Catastrophic Effect - Persistent severe environmental damage or severe nuisance extending over a large area. Loss of commercial, recreational use or nature conservancy, resulting in major financial consequences for the Company. Ongoing breaches well above statutory or prescribed limits.

5 ENVIRONMENTAL IMPACTS AND RISKS EVALUATION

This section provides the results of the risk evaluation based on the environmental hazards and risks identified during typical production operations (refer to Table 5.1 below). All impacts, segregated into unplanned and planned activities are discussed further within the following section to acknowledge the potential environmental impacts and identify relevant control measures (refer to Tables 5.2, 5.3 and 5.4).

Table 5.1 MDP Hazards Identified

ID	Hazard
Unplanned Activities	
Sub-surface Release - Crude	
1a	Hydrocarbon Spill: Loss of well control – Crude – Maximum 236,349 m^3
1b	Hydrocarbon Spill: Spill from rupture of subsea equipment - Crude - Maximum 1,400 m^3
1c	Hydrocarbon Leak: Small leak from subsea infrastructure.
Surface Release - Diesel	
2a	Hydrocarbon Spill: Spill from ruptured fuel tank - Diesel - Maximum 80m^3
2b	Hydrocarbon Spill: Spill during refuelling - Diesel - Maximum 10m^3
Surface Release - Crude	
3a	Hydrocarbon Spill: Spill from ruptured cargo tank - Crude - Maximum 500m^3
3b	Hydrocarbon Spill: Spill during crude offtake operations - Crude - Maximum 30m^3
3c	Hydrocarbon Spill: Small surface release of hydrocarbon from the wellhead platform
Planned Activities	
4	Discharges to the Marine Environment: Treated Water
5	Discharges to the Marine Environment: Produced Formation Water
6	Discharges to the Marine Environment Foam Testing
7	Discharges to the Marine Environment: Cooling Water and Brine Discharge
8	Discharges to the Marine Environment: Non Hazardous Discharges
9	Discharges to the Marine Environment: Bilge and Slops Discharge
10	Discharges to the Marine Environment: Control Fluid Discharge
Physical Presence of the FPSO	
11	Physical Presence: Introduction of invasive marine species (ballast water)
12	Physical Presence: Introduction of invasive marine species (biofouling)
13	Physical Presence: Vessel and Helicopter Movements
14	Physical Presence: Artificial Light
15	Physical Presence: Noise
16	Physical Presence: Interference of other users of the area

ID	Hazard
Waste Generation and Disposal	
17	Waste Management: Solid Waste Discharges
18	Waste Management: Hazardous Waste Discharges
Air Emissions	
19	Discharges to the Atmosphere: Release of emissions from flaring
20	Discharges to the Atmosphere: Release of greenhouse emissions from power generation
21	Discharges to the Atmosphere: Release of ozone depleting substances.
22	Discharges to the Atmosphere: Venting of gas containing volatile VOCs

5.1 UNPLANNED ACTIVITIES

Collectively, unplanned leaks and spills (i.e. uncontrolled releases) are considered to be a key environmental risk for the MDP. In many instances, scenarios under which a leak or a spill could occur also have safety implications and PTTEP AA has strict procedures in place for the handling, storage, use and disposal of these substances. Unplanned discharge of oily water, hazardous wastes, control fluids and Ozone Depleting Substances are considered in Risks 8, 9, 16, 17 and 20. An unplanned spill of hydrocarbons could occur from a number of sources as part of the MDP activities. Leaks and spills can range from a minor leak from a hose or flange to a major oil spill resulting from a full loss of well control (LOWC), flowline rupture or vessel collision.

As part of the risk assessment process, a number of potential sources of hydrocarbon spills were identified for the MDP. For the purposes of the risk assessment, these sources were classified into three categories of spill: subsurface (crude), surface (diesel) and surface (crude) to identify the worst case scenarios for each spill type and associated maximum volumes for spill modelling and EMBA evaluation purposes. In addition, the diesel refuelling and crude offloading scenarios were modelled due to their increased likelihood. The below risk assessment is a summary of the potential impacts based these scenarios further outlined in Table 7.3 of the Operations EP.

Sub-surface Release – Crude

- Scenario 1a: A 77 day release of 236,349 m^3 of Montara Crude, representing a loss of well control via wellhead and SCSSV failure
- Scenario 1b: A 6 hour subsurface release of 1,400 m^3 of Montara crude, representing a flowline rupture.
- Scenario 1c - Small subsea hydrocarbon leak from subsea infrastructure.

Surface Release – Diesel

- Scenario 2a: A 6 hour surface release of 80 m^3 of diesel, representing a minor supply vessel or FPSO collision incident.
- Scenario 2b: An instantaneous surface release of 10 m^3 of marine diesel fuel, representing a refuelling incident.

Surface Release – Crude

- Scenario 3a: A 12 hour surface release of 500 m^3 of Montara crude, representing partial loss of cargo storage tank contents.
- Scenario 3b: An instantaneous 30 m^3 surface release of Montara Crude, representing a crude offloading hose failure.
- Scenario 3c - Loss of containment from the Wellhead Platform

Table 5.2 provides a summary of the modelling results in relation to risk assessment and mitigation for the identified scenarios.

Table 5.2 Risk Assessment for Unplanned Activities

ID	Hazard	Source of Risk	Summary of Potential Environmental Impacts and Receptors	Initial Risk			Control Measures	Residual Risk		
				Consequence	Likelihood	Inherent Risk		Consequence	Likelihood	Inherent Risk
Discharges to the Marine Environment: Unplanned										
Sub-surface Release										
1a	Uncontrolled release of hydrocarbon: Wellhead and SCSSV Failure – A 77 day release of 236,349 m^3 of Montara Crude, representing a loss of well control via wellhead and SCSSV failure	Equipment malfunction, corrosion, anchor drag and/ or dropped objects	The consequence and likelihood ratings for this risk evaluation are derived following the process outlined in Attachment A. Based upon conservative environmental impact thresholds for surface, dissolved and entrained hydrocarbon, the worst-case full loss of well control, although unlikely, may result in serious, widespread & persistent changes to particular values & sensitivities including: • Marine mammals (cetaceans & dugongs); • Sharks (including whale sharks), sawfish & rays; • Fish species; • Marine Reptiles; • Avifauna (migratory & non-migratory birds) • Marine Reptiles ; • Benthic communities including coral reef, seagrass; • Shoreline communities including mangroves & sandy beaches; • Protected areas including commonwealth marine reserves & key ecological features; • Heritage places; • Commercial & subsistence fisheries,; and • Tourism & recreation There may also be some minor disruption to: • Other petroleum operators; • Ports & shipping; and • Commonwealth defence activities	NA	NA	NA	Detailed management and mitigation measures to be implemented in the event of a LOWC scenario have been provided within Section 5 of the accepted Montara Operations Oil Pollution Emergency Plan (MV-HSE-D41-811606). Additional preventative management measures not included within the MDP Operations OPEP are: • PTTEP AA Montara Subsea Integrity Management Plan (MV-MN-D33-812441) which includes inspection, monitoring and maintenance of subsea equipment. The Plan also includes design and verification of equipment (as per industry codes and standards) such as Emergency Shutdown (ESD) systems enabling isolation of the process and low pressure alarms. • PTTEP AA Corrosion Management Strategy (MV-MN-D33-812291) which includes monitoring of surface and subsea corrosion to ensure the technical integrity of infrastructure and pipelines. The EP outlines the process for undertaking corrosion risk assessments and inspections, development of corrosion management plans and the implementation of these plans including monitoring, measuring, review and auditing. • PTTEP AA Containment – Subsea Wells and Infrastructure (MV-HSE-D30-811916) which includes inspections to ensure subsea infrastructure is fit for service and degradation or damage is within design limits. • PTTEP AA Offtake Operations – Facility Information Requirements (MV-OP-D32-808302) which manages all offtake tanker movements and operations. Specifically it details pre arrival communications protocols and requires that offtake tankers will be moored by an appropriately designed mooring system (including capability for extreme weather events such as cyclones and for single line failure), presence of pilot and assistance on the offtake tanker, designated anchoring areas away from subsea infrastructure and use of trained and competent personnel. • Establishment of a 500m zone around facilities to ensure restricted and controlled vessel access to within close proximity of facilities in accordance with the Maritime Transport and Offshore Facilities Security Regulations 2003 Division 6.5 (Offshore Waterside Restricted Zone) and OPGGSA Section 6.6 (Petroleum Safety Zone). • Marine oil spill preparedness measures and response arrangements are detailed in the MDP Operations OPEP (Section 5). The MDP Operations OPEP will be implemented by competent and experienced response personnel. • PTTEP AA Blowout Contingency Plan (IC-DR-D41-810550) is a non-preventative measure which establishes a strategic mechanism for an efficient blowout intervention response and is closely aligned with the PTTEP AA Montara Emergency Response Plan (MV-HSE-D30-811580).	4*	B*	M

ID	Hazard	Source of Risk	Summary of Potential Environmental Impacts and Receptors	Initial Risk			Control Measures	Residual Risk		
				Consequence	Likelihood	Inherent Risk		Consequence	Likelihood	Inherent Risk
1b	Flowline Failure or Rupture - A 6 hour subsurface release of 1,400 m^3 of Montara crude, representing a flowline rupture.	Equipment malfunction, corrosion, anchor drag and/or dropped objects	Potential impacts on marine flora and fauna and habitats include coating and/ or smothering, contamination and mortality, toxicological effects and oiling of islands and emergent coral reefs.	E	3	H	The control measures implemented to reduce the risk of a flowline rupture include: • PTTEP AA Montara Subsea Integrity Management Plan (MV-MN-D33-812441) which includes inspection, monitoring and maintenance of subsea equipment. The Plan also includes design and verification of equipment (as per industry codes and standards) and Emergency Shutdown (ESD) systems enabling isolation of the process and low pressure alarms. • PTTEP AA Montara Corrosion Management Strategy (MV-MN-D33-812291) which includes monitoring of subsea corrosion to ensure the technical integrity of subsea infrastructure and pipelines. The EP outlines the process for undertaking corrosion risk assessments and inspections, development of corrosion management plans and the implementation of these plans including monitoring, measuring, review and auditing. • PTTEP AA Offtake Operations – Facility Information Requirements Regulations (MV-OP-D32-808302) which manages all offtake tanker movements and operations. Specifically it details pre arrival communications protocols and requires that offtake tankers will be moored by an appropriately designed mooring system (including capability for extreme weather events such as cyclones and for single line failure), presence of pilot and assistance on the offtake tanker, designated anchoring areas away from subsea infrastructure and use of trained and competent personnel. • Establishment of a 500m zone around facilities to ensure restricted and controlled vessel access to within close proximity of facilities in accordance with the Maritime Transport and Offshore Facilities Security Regulations 2003 Division 6.5 (Offshore Waterside Restricted Zone) and OPGGSA Section 6.6 (Petroleum Safety Zone). • Marine oil spill preparedness measures and response arrangements are detailed in the MDP Operations OPEP (Section 5). The MDP Operations OPEP will be implemented by competent and experienced response personnel.	D	1	M
1c	Small subsea hydrocarbon spill/leak from subsea infrastructure.	Equipment malfunction, corrosion.	Potential impacts on marine flora and fauna and habitats include coating and/ or smothering, contamination and mortality and toxicological effects.	C	3	M	The risks of small subsea leaks occurring as a result of equipment failure are controlled via the implementation of: • The PTTEP AA Montara Subsea Integrity Management Plan (MV-MN-D33-812441) which includes inspection, monitoring and maintenance of subsea equipment. The Plan also includes design and verification of equipment (as per industry codes and standards) such as Emergency Shutdown (ESD) systems enabling isolation of the process and low pressure alarms. • The PTTEP AA Corrosion Management Strategy (MV-MN-D33-812291) which includes monitoring of subsea corrosion to ensure the technical integrity of subsea infrastructure and pipelines. The EP outlines the process for undertaking corrosion risk assessments and inspections, development of corrosion management plans and the implementation of these plans including monitoring, measuring, review and auditing. • Marine oil spill preparedness measures and response arrangements as detailed in the MDP Operations OPEP (Section 5). The OPEP will be implemented by competent and experienced response personnel.	B	2	L

ID	Hazard	Source of Risk	Summary of Potential Environmental Impacts and Receptors	Initial Risk			Control Measures	Residual Risk		
				Consequence	Likelihood	Inherent Risk		Consequence	Likelihood	Inherent Risk
Surface Release – Diesel										
2a	Large surface release of diesel Maximum volume 80m^3	Vessel Collision - Spill from ruptured fuel tank	Potential impacts on marine flora and fauna and habitats include coating and/ or smothering, contamination and mortality, toxicological effects and oiling of islands and emergent coral reefs.	D	3	H	The risks associated with potentially large surface releases of diesel from a ruptured fuel tank due to a vessel collision are managed as follows: • All supply vessel movements will be in accordance with the Supply Vessel - Operations Work Instructions (MV-OP-D32-856535) which details facility approach communications protocols and stipulates that FPSO Marine Supervisor shall be in attendance throughout supply vessel operations. • The establishment of a 500m zone around facilities to ensure restricted and controlled vessel access to within close proximity of facilities in accordance with the Maritime Transport and Offshore Facilities Security Regulations 2003 Division 6.5 (Offshore Waterside Restricted Zone) and OPGGSA Section 6.6 (Petroleum Safety Zone) • Vessel crew competency will meet the Convention of Standards of Training, Certification and Watch-keeping for Seafarers (STCW95). • Implementation of the PTTEP AA Offtake Operations – Facility Information Requirements Regulations (MV-OP-D32-808302) which manages all offtake tanker movements and operations. Specifically it details pre arrival communications protocols and requires that offtake tankers will be moored by an appropriately designed mooring system (including capability for extreme weather events such as cyclones and for single line failure), presence of pilot and assistance on the offtake tanker, designated anchoring areas away from subsea infrastructure and use of trained and competent personnel • Implementation of standard maritime safety procedures for supply vessels in accordance with Marine Orders Part 30 including 24hr watch, radio contact and display of navigational lights and beacons • Implementation of MARPOL 73/78 Annex 1 Regulation 37 - Vessel specific Shipboard Oil Pollution Emergency Plan (SOPEP) for supply vessels with procedures to minimise loss to the marine environment. • Marine oil spill preparedness measures and response arrangements as detailed in the MDP Operations OPEP (Section 5). The MDP Operations OPEP will be implemented by competent and experienced response personnel.	C	2	M

ID	Hazard	Source of Risk	Summary of Potential Environmental Impacts and Receptors	Initial Risk			Control Measures	Residual Risk		
				Consequence	Likelihood	Inherent Risk		Consequence	Likelihood	Inherent Risk
2b	Small surface release of diesel Maximum volume $10m^3$	Bunkering spill - Equipment failure Loss of hose control	Potential impacts on marine flora and fauna and habitats include coating and/ or smothering, contamination and mortality, toxicological effects and oiling of islands and emergent coral reefs.	C	3	M	The risks associated with potentially small surface releases of diesel as a result of bunkering are managed as follows: • Implementation of MARPOL 73/78 Annex 1 Regulation 37 - Vessel specific Shipboard Oil Pollution Emergency Plan (SOPEP) for supply vessels with procedures to minimise loss to the marine environment. • Implementation of PTTEP AA Bunkering procedures (detailed within the Marine Diesel Oil System Operating Procedure Manual (MV-OP-D32-807744) that include shutdown of pumps, automatic closure of safety valves and dry-break couplings on hoses for managing spills onboard. The bunkering station on board the FPSO has an incorporated save-all bund to collect minor spills, this prevents minor spills from entering the marine environment. Refuelling will be undertaken by fully trained, certified and competent personnel. Communication (i.e. radio contact) will be maintained between FPSO/ supply vessel during refuelling operations and refuelling personnel will maintain continuous observation to allow for rapid shutdown of fuel pumps and spill response. Fuel tank levels will be continuously monitored to prevent overflow and monitoring of weather conditions and sea state will be undertaken to ensure that refuelling is undertaken when sea conditions are sufficiently calm, as determined by the FPSO Control Room/ Vessel Captains involved in the refuelling operation. These mitigation measures will reduce the volume that could be released to the marine environment. • Marine oil spill preparedness measures and response arrangements as detailed in the MDP Operations OPEP (Section 5). The MDP Operations OPEP will be implemented by competent and experienced response personnel.	C	2	M
Surface Release - Hydrocarbon										
3a	Large surface release of hydrocarbon Crude - Maximum volume - $500m^3$	Vessel Collision	Potential impacts on marine flora and fauna and habitats include coating and/ or smothering, contamination and mortality, toxicological effects and oiling of islands and emergent coral reefs.	D	3	H	The risks associated with potentially large surface releases of crude hydrocarbon as a result of a vessel collision are managed as follows: • All supply vessel movements will be in accordance with the Supply Vessel - Operations Work Instruction (MV-OP-D32-856535) which details facility approach communications protocols and stipulates that FPSO Marine Supervisor shall be in attendance throughout supply vessel operations. • The establishment of a 500m zone around facilities to ensure restricted and controlled vessel access to within close proximity of facilities in accordance with the Maritime Transport and Offshore Facilities Security Regulations 2003 Division 6.5 (Offshore Waterside Restricted Zone) and OPGGSA Section 6.6 (Petroleum Safety Zone) • Implementation of the PTTEP AA Offtake Operations – Facility Information Requirements Regulations (MV-OP-D32-808302) which manages all offtake tanker movements and operations. Specifically it details pre arrival communications protocols and requires that offtake tankers will be moored by an appropriately designed mooring system (including capability for extreme weather events such as cyclones and for single line failure), presence of pilot and assistance on the offtake tanker, designated anchoring areas away from subsea infrastructure and use of trained and competent personnel. • Relevant personnel will have the following qualification - Convention of Standards of Training, Certification and Watch-keeping for Seafarers (STCW95). • Implementation of standard maritime safety procedures for supply vessels in accordance with Marine Orders Part 30 including 24hr watch, radio contact and display of navigational lights and beacons. • Implementation of the Montara Shipboard Oil Pollution Emergency Plan (SOPEP) (MV-	C	2	M

ID	Hazard	Source of Risk	Summary of Potential Environmental Impacts and Receptors	Initial Risk			Control Measures	Residual Risk		
				Consequence	Likelihood	Inherent Risk		Consequence	Likelihood	Inherent Risk
							HSE-D30-812013) includes procedures for minimising loss to marine environment from tank rupture such as transfer to alternative tanks. • Montara Bilge, Ballast and Cargo System (P48) Performance Standard (MV-HSE-D30-811919) will be implemented to ensure inspection, monitoring and maintenance of cargo pumps and associated equipment to ensure effective pumping and transfer can be undertaken in event of a cargo tank rupture. • Marine oil spill preparedness measures and response arrangements as detailed in the MDP Operations OPEP (Section 5). The MDP Operations OPEP will be implemented by competent and experienced response personnel.			
3b	Small surface release of hydrocarbon Crude - Maximum volume - 30m^3	Rupture or improper connection/ disconnection of product transfer hoses	Potential impacts on marine flora and fauna and habitats include coating and/ or smothering, contamination and mortality, toxicological effects and oiling of islands and emergent coral reefs. Refer to Section 7.1.5 of the Operations EP for a detailed description of potential impacts.	D	3	H	The risks associated with potentially small surface releases of crude hydrocarbon associated with a failure of the product transfer hoses, are managed as follows: • Implementation of the PTTEP AA Offtake Operations – Facility Information Requirements Regulations (MV-OP-D32-808302) which manages all offtake tanker movements and transfer operations. Specifically it details communications protocols and requires that offtake tankers will be moored by an appropriately designed mooring system (including capability for extreme weather events such as cyclones and for single line failure), presence of pilot and assistance on the offtake tanker, use of breakaway couplings and use of trained and competent personnel. • Implementation of the Montara Shipboard Oil Pollution Emergency Plan (SOPEP) (MV-HSE-D30-812013) includes procedures for minimising loss to marine environment for spills onboard. • Marine oil spill preparedness measures and response arrangements as detailed in the MDP Operations OPEP (Section 5). The MDP Operations OPEP will be implemented by competent and experienced response personnel.	C	2	M
3c	Small surface release of hydrocarbon from the wellhead platform or FPSO	Equipment failure or vessel collision	Potential impacts on marine flora and fauna and habitats include coating and/ or smothering, contamination and mortality, toxicological effects and oiling of islands and emergent coral reefs. Potential disruption of commercial fishing activities.	D	2	M	The risks associated with potentially small surface releases from the WHP or FPSO, are managed as follows: • Compliance with PTTEP AA Montara Structural Integrity Management Manual - WHP and FPSO Topsides (MV-MN-D33-812058) will be implemented to ensure inspection, monitoring and maintenance of WHP and FPSO equipment, specifically the wellhead platform flowline flanges. • All supply vessel movements will be in accordance with the Supply Vessel - Operations Work Instruction (MV-OP-D32-856535) which details facility approach communications protocols and stipulates that FPSO Marine Supervisor shall be in attendance throughout supply vessel operations. • The establishment of a 500m zone around facilities to ensure restricted and controlled vessel access to within close proximity of facilities in accordance with the Maritime Transport and Offshore Facilities Security Regulations 2003 Division 6.5 (Offshore Waterside Restricted Zone) and OPGGSA Section 6.6 (Petroleum Safety Zone) • Implementation of the PTTEP AA Offtake Operations – Facility Information Requirements Regulations (MV-OP-D32-808302) which manages all offtake tanker movements and operations. Specifically it details pre arrival communications protocols and requires that offtake tankers will be moored by an appropriately designed mooring system (including capability for extreme weather events such as cyclones and for single line failure), presence of pilot and assistance on the offtake tanker, designated anchoring areas away from subsea infrastructure and use of trained and competent personnel. • Relevant personnel will have the following qualification - Convention of Standards of	B	2	L

ID	Hazard	Source of Risk	Summary of Potential Environmental Impacts and Receptors	Initial Risk			Control Measures	Residual Risk		
				Consequence	Likelihood	Inherent Risk		Consequence	Likelihood	Inherent Risk
							Training, Certification and Watch-keeping for Seafarers (STCW95). • Implementation of standard maritime safety procedures for supply vessels in accordance with Marine Orders Part 30 including 24hr watch, radio contact and display of navigational lights and beacons • Marine oil spill preparedness measures and response arrangements as detailed in the MDP Operations OPEP (Section 5). The MDP Operations OPEP will be implemented by competent and experienced response personnel.			

5.2 PLANNED ACTIVITIES

Table 5.3 below provides a summary of the risk assessment, including potential environmental impacts and control measures for the planned activities associated with the operation of the MDP.

Table 5.3 Risk Assessment for Planned Activities

ID	Hazard	Source of Risk	Summary of Potential Environmental Impacts and Receptors	Initial Risk			Control Measures	Residual Risk		
				Consequence	Likelihood	Inherent Risk		Consequence	Likelihood	Inherent Risk
Discharges to the Marine Environment: Planned										
4	Discharge of Treated Water	Treated water may be required to be discharged as part of maintenance activities. This will be infrequent and volumes will be minor – e.g. Hydrotest, and Dewatering operations during Commissioning and Maintenance	Localised and temporary impacts to water quality and marine fauna in open ocean waters. Sensitive Receptors The risk rankings are based on the likelihood and consequence of potential impacts to the following receptors: • Cetaceans • Marine Reptiles • Fish • Migratory Seabirds	A	1	L	Potential risks associated with planned discharges of treated water will be managed via implementation of the following measures: • Ensuring all treated water will be treated through the PFW treatment system prior to discharge. • Implementation of the PTTEP AA Produced Water System Operating Procedure Manual (MV-OP-D32-807731), which includes calibration, sampling, monitoring, maintenance, emergency and shutdown procedures. All components of the Produced Water Systems will be maintained in good working order, in line with the manufacturer's specifications, to ensure efficient operation and discharge of on-spec produced water. • Implementation of the PTTEP AA Chemical Management Procedure (S32-501162-CORP), which specifies the process to assess and review chemicals that are requested to be used offshore. This specifies that the use of CHARM Gold or Silver or OCNS Category E of D rated chemicals require no further assessment. If other rated or non-rated chemicals are required the chemical(s) will be assessed for acceptability before use.	A	1	L

5	Discharge of PFW	Routine discharge of treated PFW to the marine environment.	The potential impact is expected to be localised short term nuisance impacts to individual or small populations of fish and marine fauna.	NA	NA	NA	Potential risks associated with the planned discharge of PFW will be managed via implementation of the following measures:
							• Ensuring PFW is treated through the Separator system, followed by the PFW treatment system.
							• Discharge of PFW in accordance with the PTTEP AA Produced Water System Operating Procedure Manual (MV-OP-D32-807731), which includes the following elements:
							  • sets the limit for oil in produced water as less than 36ppmV maximum (30mg/L), averaged over each batch or a onetime instantaneous reading of 40ppmv and details online monitoring programs;
							  • details routine maintenance and calibration of OIW Discharge Monitoring Equipment; and
							  • details routine monitoring of PFW.
								B*	2*	L*

6	Discharge of Foam during Testing	The discharge of approx. 50-100L of a fire extinguishing agent (MOUSSOL-APS LV 1X1) from the FPSO for safety critical annual fire system testing as part of the automatic fire protection performance standard.	Due to the nature of the chemical and expected rapid dilution at the point of discharge and the absence of sensitive receptors in close proximity to the MDP the potential for toxic effects on marine organisms is considered low and extremely unlikely. Localised and temporary impacts to water quality and marine fauna in open ocean waters Sensitive Receptors The risk rankings are based on the likelihood and consequence of potential impacts to the following receptors:	A	1	L	Potential risks associated with the discharges of foam as a result of the annual fire system testing procedures will be managed via implementation of the following measures: • Ensuring testing activities comply with the PTTEP AA Chemical Management Procedure (S32-501162-CORP), which specifies the process to assess and review chemicals that are requested to be used offshore. This specifies that the use of CHARM Gold or Silver or OCNS Category E of D rated chemicals require no further assessment. If other rated or non- rated chemicals are required the chemical(s) will be assessed for acceptability before use. • Ensuring testing activities comply with the PTTEP AA Automatic Fire Protection System (F24) Performance Standard (MV-HSE-D30-811903), which includes operation and maintenance procedures in line with the manufacturer's specifications, to ensure efficient operation and minimum discharge required to test the equipment.	A	1	L

ID	Hazard	Source of Risk	Summary of Potential Environmental Impacts and Receptors	Initial Risk			Control Measures	Residual Risk		
				Consequence	Likelihood	Inherent Risk		Consequence	Likelihood	Inherent Risk
			• Cetaceans • Marine Reptiles • Fish • Migratory Seabirds							
7	Cooling Water and Brine Discharge	Use of seawater for cooling and freshwater production.	Thermal impact to marine biota. Localised decline in water quality associated with reduced dissolved oxygen concentrations (resulting from increased water temperature). Temporary and localised toxic effects to marine biota due to the use of biocide additives. Sensitive Receptors The risk rankings are based on the likelihood and consequence of potential impacts to the following receptors: • Cetaceans • Sharks • Marine Reptiles • Fish	B	2	L	Potential risks associated with the discharges of cooling water and brine discharges will be managed via implementation of the following measures: • Ensuring that cooling water effluent temperature does not exceed 3ºC greater than ambient water temperature outside of 100m from point of discharge and annual marine environmental monitoring undertaking to verify. • Implementing the PTTEP AA Marine Seawater Systems Operating Procedure Manual (MV-OP-D32-807745), which includes sampling, monitoring, maintenance, emergency and shutdown procedures. All components of the main and auxiliary seawater cooling systems will be maintained in good working order, in line with the manufacturer's specifications, to ensure efficient operation and discharge.	B	2	L

8	Non Hazardous Discharges	Routine discharge of treated sewage, grey water, and putrescible wastes to the marine environment from FPSO and support vessels	Localised and temporary impacts to water quality (i.e. nutrient enrichment) in surface waters
			Attraction of marine fauna in the vicinity of the FPSO.
			Potential changes in fauna behaviour leading to changes in the local population over the lifespan of the operation
			Sensitive Receptors
			The risk rankings are based on the likelihood and consequence of potential impacts to the following receptors:
			• Cetaceans
			• Sharks
			• Marine Reptiles
			• Fish
				B	2	L	Potential risks associated with the discharges of domestic wastes will be managed via implementation of the following measures:
							• Compliance with PTTEP AA Sewage/ Black/ Grey Water Operating Procedure Manual (MV-OP-D32-807748), which includes design, monitoring and maintenance, emergency and shutdown procedures and detection systems and alarms. All components of the Sewage/ Black/ Grey Water treatment systems will be maintained in good working order, in line with the manufacturer's specifications, to ensure efficient operation and discharge.
							• Compliance with Montara Venture Waste and Discharges Procedure (MV-HSE-D30-821338), which details waste production streams, garbage collection points and segregation, waste handling and disposal, incident reporting, record keeping, training and awareness and review and auditing to ensure correct discharge of sewage, grey water and putrescibles waste to the marine environment. The EP includes the following MARPOL requirements:
							• MARPOL 73/78 Annex IV Part 96: Marine Pollution Prevention – Sewage (as implemented in Commonwealth waters by the Protection of the Sea (*Prevention of Pollution from Ships) Act 1983*), specifically:
							  • Approved Sewage Treatment Plant (STP).
							  • International Sewage Pollution Prevention Certificate (ISPPC).
							• MARPOL 73/78 Annex V (garbage) (as implemented in Commonwealth waters by the Protection of the Sea (*Prevention of Pollution from Ships) Act 1983*), specifically:
							  • Garbage ground or comminuted to particles < 25 mm and discharged > 3 nm from the nearest land.
							  • Garbage Record Book.
								B	2	L

9	Bilge and Slops Water Discharge	Routine discharges of bilge and slops water to the marine	Localised and temporary impacts to water quality and marine fauna in open ocean waters resulting from the discharge of bilge and slopes	A	2	L	Potential risks associated with bilge and slops water discharges will be managed via implementation of the following measures:	A	2	L

ID	Hazard	Source of Risk	Summary of Potential Environmental Impacts and Receptors	Initial Risk			Control Measures	Residual Risk		
				Consequence	Likelihood	Inherent Risk		Consequence	Likelihood	Inherent Risk
		environment.	water Sensitive Receptors The risk rankings are based on the likelihood and consequence of potential impacts to the following receptors: • Cetaceans • Seabirds • Marine Reptiles • Fish				• Compliance with Montara Venture Waste and Discharges Procedure (MV-HSE-D30-821338), which details incident reporting, bunding of hydrocarbon areas with potential for hydrocarbon storage and contamination, record keeping, training and awareness, review and auditing and compliance of FPSO. • Compliance with PTTEP AA Montara Structural Integrity Management Manual - WHP and FPSO Topsides (MV-MN-D33-812058) will be implemented to ensure inspection, monitoring and maintenance of WHP and FPSO equipment, including the drainage systems. • Implementation of the PTTEP AA Flare and Drainage Systems Operating Procedure Manual (MV-OP-D32-807735), which includes monitoring, maintenance, emergency and shutdown procedures. All components of the system will be maintained in good working order, in line with the manufacturer's specifications, to ensure effective drainage and efficient combustion of gas and diesel. • Additional mitigation measures for bilge and slops discharge associated with the PFW treatment system it is directed through are detailed below: • The concentration of petroleum in any bilges and slops water discharged is < 36 ppmV averaged over each batch discharge or 40 ppmV instantanous. A continuous monitoring device is fitted on the outlet of the hydrocyclones ensuring only water within specification will be discharged overboard. Water that does not meet specifications will be directed to the FPSO vessel's produced water tanks and re-routed through the process for additional treatment until the oil-in-water levels are reduced below the prescribed level. • PTTEP AA Produced Water System Operating Procedure Manual (MV-OP-D32-807731), which includes sampling, monitoring, maintenance, emergency and shutdown procedures of the produced water treatment system. All components of the Produced Water treatment system will be maintained in good working order, in line with the manufacturer's specifications, to ensure efficient operation and discharge of on-spec produced water. • The PFW oil in water meter shall be maintained and calibrated every six months as detailed in PTTEP AA Produced Water System Operating Procedure Manual (MV-OP-D32-807731) and in accordance with manufacturer's (Turner Designs) specifications (825208 – Commissioning Dossier – System 44 – Oily Water). The calibration will be in accordance with AS/NZS ISO 9001:2008 Quality Management Systems – Requirements, Section 7.6 relating to control of monitoring and measuring equipment.			
10	Control Fluid Discharge	Subsea discharge of control fluids due to valve operations in subsea equipment	Localised and temporary impacts to water quality and marine fauna in open ocean waters. Sensitive Receptors The risk rankings are based on the likelihood and consequence of potential impacts to the following receptors: • Cetaceans • Seabirds • Marine Reptiles • Fish	B	2	L	Potential risks associated with control fluid discharges will be managed via implementation of the following measures: • Implementation of the PTTEP AA Montara Subsea Integrity Management Plan (MV-MN-D33-812441) which includes inspection, monitoring and maintenance of subsea equipment. The Plan also includes design and verification of equipment (as per industry codes and standards). • Implementation of the PTTEP AA Chemical Management Procedure (S32-501162-CORP), which specifies the process to assess and review chemicals that are requested to be used offshore. This specifies that the use of CHARM Gold or Silver or OCNS Category E of D rated chemicals require no further assessment. • If other rated or non- rated chemicals are required, the chemical(s) will be assessed for acceptability before use.	B	2	L

5.3 PHYSICAL PRESENCE OF FPSO, WHP AND SUPPORT VESSELS

Table 5.4 below provides a summary of the risk assessment, including potential environmental impacts and control measures for the physical presence of FPSO, WHP and support vessels associated with the operation of the MDP.

Table 5.4 Risk Assessment for the Physical Presence of FPSO, WHP and Support Vessels

ID	Hazard	Source of Risk	Summary of Potential Environmental Impacts and Receptors	Initial Risk			Control Measures	Residual Risk		
				Consequence	Likelihood	Inherent Risk		Consequence	Likelihood	Inherent Risk

11	Introduction of invasive marine species	Transport/ introduction of invasive marine species (IMS) in vessel ballast water.	Introduction and establishment of IMS and displacement of native marine species through increased competition, predation or changes to the marine ecosystem.
			Sensitive Receptors
			The risk rankings are based on the likelihood and consequence of potential impacts to the following receptors.
			Benthic communities associated with
			• Barracouta, Vulcan and Goeree Shoals
			• Ashmore Reef and Cartier Island
			• Hibernia Reef
			Socio-economic
			• Commercial fisheries
			• Traditional fisheries
				B	2	L	Potential risks associated with IMS from vessel ballast water will be managed via implementation of the following measures:
							• Compliance with PTTEP AA Contractor Management Standard (SSHE-106-STD-310) that requires compliance with:
							  • AQIS Australian Ballast Water Management Requirements including all foreign ballast water exchanges conducted more than 50 nm from land and in greater than 200 m water depth.
							  • Operations will be in accordance with the Australian Ballast Water Management Requirements (Version 7, 2017) and Biosecurity Act 2015.
								B	2	L

12	Introduction of invasive marine species	Transport/ introduction of IMS on hull, internal niches and in-water equipment (biofouling).	Introduction and establishment of IMS and displacement of native marine species through increased competition, predation or changes to the marine ecosystem.
			Sensitive Receptors
			The risk rankings are based on the likelihood and consequence of potential impacts to the following receptors:
			Benthic communities associated with:
			• Barracouta, Vulcan and Goeree Shoals
			• Ashmore Reef and Cartier Island
			• Hibernia Reef
			Socio-economic:
			• Commercial fisheries
			• Traditional fisheries
				B	2	L	Potential risks associated with IMS as a result of biofouling will be managed via implementation of the following measures:
							• Completing biofouling risk assessments of Montara Venture FPSO and site location undertaken in accordance with the National Biofouling Management Guidance for the Petroleum Production and Exploration Industry (Commonwealth of Australia 2009)
							  • Compliance with PTTEP AA Contractor Management Standard (SSHE-106-STD-310) which requires compliance with:
							  – AQIS Australian Ballast Water Management Requirements including all foreign ballast water exchanges conducted more than 50 nm from land and in greater than 200 m water depth.
							  – Australian Ballast Water Management Requirements (Version 7, 2017).
								B	2	L

13	Vessel Movements	Interaction with marine fauna during supply vessel movement	Injury/mortality of marine fauna, particularly cetaceans and turtles, from a vessel collision. Sensitive Receptors The risk rankings are based on the likelihood and consequence of potential impacts to the following receptors: • Cetaceans • Marine Reptiles • Dugongs	A	1	L	Potential risks associated with supply vessels interacting with marine fauna will be managed via implementation of the following measures: • Compliance with EPBC Regulations 2000 – Part 8 Division 8.1 Interacting with cetaceans, specifically: • Support vessels will not travel greater than 6 knots within 300 m of a whale and approach no closer than 100 m from a whale	A	1	L

ID	Hazard	Source of Risk	Summary of Potential Environmental Impacts and Receptors	Initial Risk			Control Measures	Residual Risk		
				Consequence	Likelihood	Inherent Risk		Consequence	Likelihood	Inherent Risk
			• Sharks.							
14	Artificial Light	Illumination of WHP, FPSO, export tankers and supply vessels for safety purposes	Attraction of marine fauna to the MDP causing potential changes in predatory/ prey behaviour. Disruption/ disorientation of migrating birds and other marine life that may be attracted. The likely impacts associated with light emissions from the MDP are limited to localised disturbance of very low numbers of marine fauna that may be present (transiting) in the vicinity of the operations. <u>Sensitive Receptors</u> The risk rankings are based on the likelihood and consequence of potential impacts to the following receptors: • Marine Reptiles • Migratory Seabirds • Fish	A	1	L	Potential risks associated with illumination of the WHP, FPSO, tankers and supply vessels disrupting marine fauna will be managed via implementation of the following measures: • Maintaining levels of lighting on FPSO, WHP and vessels to as low as reasonably practical that still comply with navigational requirements and allow safe operations.	A	1	L

15	Noise	Standard operation of FPSO and supply vessels - Excessive continuous noise above a tolerable threshold for marine fauna may result in damage to the auditory system, behavioural change, avoidance, temporary shift in hearing thresholds and interference with acoustic signals (McCauley et al., 2003).	Potential impacts to marine fauna include damage to the auditory system, behavioural change, avoidance, temporary shift in hearing thresholds and interference with acoustic signals.
			<u>Sensitive Receptors</u>
			The risk rankings are based on the likelihood and consequence of potential impacts to the following receptors:
			• Cetaceans
			• Marine Reptiles
			• Dugongs
			• Migratory Seabirds.
				A	1	L	Potential risks associated with noise emissions from the facilities will be managed via implementation of the following measures:
							• Compliance with EPBC Regulations 2000 – Part 8 Division 8.1 Interacting with cetaceans which state specifically:
							  • Support vessels will not travel greater than 6 knots within 300 m of a whale (caution zone) and approach no closer than 100 m (no approach zone) from a whale.
							  • Preventative maintenance system ensures maintenance of engines and equipment to operate efficiently and minimise excess noise from FPSO.
								A	1	L

16	Interference of other users of the area	500m safety zone established around the FPSO and WHP which excludes non-authorised vessels.	Interference with commercial fishing vessels, commercial shipping, and other marine users. Interruption to MDP (e.g. supply vessels to/ from FPSO) due to damage to commercial vessels or fishing gear. <u>Sensitive Receptors</u> The risk rankings are based on the likelihood and consequence of potential impacts to the following receptors:	A	1	L	Potential risks associated with interference between the MDP facilities and other marine users will be managed via implementation of the following measures: • Compliance with OPGGSA Section 280 - Interference with Others Rights • Advising key stakeholders of the safety and exclusion zones associated with the MDP and the Australian Hydrographic Office issuing a Notice to Mariners. • The establishment of 500m zone around facilities to ensure restricted and controlled vessel access to within close proximity of facilities in accordance with following: • Compliance with Maritime Transport and Offshore Facilities Security Regulations 2003 Division 6.5 (Offshore Waterside Restricted Zone) and OPGGSA Section 6.6 (Petroleum	A	1	L

ID	Hazard	Source of Risk	Summary of Potential Environmental Impacts and Receptors	Initial Risk			Control Measures	Residual Risk		
				Consequence	Likelihood	Inherent Risk		Consequence	Likelihood	Inherent Risk
			• Commercial fisheries • Commercial Shipping.				Safety Zone)			
Waste Management and Disposal										

17	Solid Waste Discharges	Accidental release of solid non-biodegradable, non-hazardous waste (e.g. plastics, glass, metal, etc.) due to inadequate storage, transfer or disposal procedures.	Decline in water quality.
			Potential injury to fauna via the ingestion of plastics and entanglement in wastes.
			Sensitive Receptors
			The risk rankings are based on the likelihood and consequence of potential impacts to the following receptors:
			Marine Fauna including:
			• Migratory Seabirds
			• Cetaceans
			• Marine Reptiles
			• Fish
				B	2	L	Potential risks associated with the accidental release of solid non-biodegradable, non-hazardous waste will be managed via implementation of the following measures:
							• Compliance with Montara Venture Waste and Discharges Procedure (MV-HSE-D30-821338), which details waste production streams, garbage collection points and segregation, waste handling and disposal, incident reporting, record keeping, training and awareness and review and auditing to ensure effective and efficient waste handling and disposal. Plan includes requirements for FPSO and supply vessels to comply with:
							  • MARPOL 73/78 Annex V: Garbage (as implemented in Commonwealth waters by the *Protection of the Sea (Prevention of Pollution from Ships) Act 1983*), specifically:
							  – Garbage Record Book.
							  – Waste delivery receipts.
							• Ensuring all waste transfers are undertaken in accordance with Supply Vessel Operations Procedure (MV-OP-D32-856535) which details attendance by Marine Supervisor throughout operations, communication protocols and transfers undertaken in suitable weather conditions as determined by Marine Supervisor.
								B	2	L

18	Hazardous Waste Discharges	Accidental release of hazardous waste, due to inadequate storage, cleaning, transfer or disposal procedures.	Decline in water quality.
			Toxic effects to marine biota.
			Sensitive Receptors
			The risk rankings are based on the likelihood and consequence of potential impacts to the following receptors:
			Marine Fauna including:
			• Migratory Seabirds
			• Cetaceans
			• Marine Reptiles
			• Fish
				B	1	L	Potential risks associated with the accidental release of hazardous waste will be managed via implementation of the following measures:
							• Compliance with Montara Venture Waste and Discharges Procedure (MV-HSE-D30-821338), which includes requirements for waste production streams, garbage collection points and segregation, waste handling and disposal, incident reporting, record keeping, training and awareness and review and auditing, including the following:
							  • Waste register for all hazardous waste transported and disposed of onshore maintained in accordance with MARPOL 73/78 Annex III.
							  • Documentation of Multimodal Dangerous Goods Form completed for the transport of all hazardous wastes, as per MARPOL 73/78 Annex III Regulation 4.
							  • Hazardous waste stored in designated and bunded area.
							  • Hazardous Materials Registry.
							• Ensuring all waste transfers are undertaken in accordance with Supply Vessel Operations Procedure (MV-OP-D32-856535) which details attendance by Marine Supervisor throughout operations, communication protocols and transfers undertaken in suitable weather conditions as determined by Marine Supervisor.
							• Ensuring that if identified, NORMs will be managed in accordance with the Radiation Protection Plan (D30-504340-FACCOM) and Montara Venture Waste and Discharges Procedure (MV-HSE-D30-821338) which includes requirements for:
							  • A waste register for all hazardous waste transported and disposed of onshore maintained in accordance with MARPOL 73/78 Annex III.
							  • Documentation of Multimodal Dangerous Goods Form completed for the transport of all hazardous wastes, as per MARPOL 73/78 Annex III Regulation 4.
							  • Hazardous wastes stored in designated and bunded areas.
							  • A Hazardous Materials Registry.
								B	1	L

ID	Hazard	Source of Risk	Summary of Potential Environmental Impacts and Receptors	Initial Risk			Control Measures	Residual Risk		
				Consequence	Likelihood	Inherent Risk		Consequence	Likelihood	Inherent Risk
Atmospheric Emissions										
19	Air Emissions	Flaring of gases encountered from the oil extraction process resulting on the release of emissions Increased flaring during commissioning.	Atmospheric emissions from flaring have the potential to result in a localised reduction in air quality. Disturbance (behavioral alteration) to fauna from light emissions. A detailed impact and risk evaluation is provided in Section 7.5.1 of the Operations EP which identified that Avifauna may be affected by localised and minor reductions in air quality from flaring may alter the flight path of avifauna.	NA	NA	NA	Potential risks associated with the flaring of gases will be managed via implementation of the following measures: • Adherence to the Gas Flaring and Venting Reduction Guideline (SSHE-106-GDL-527) which Aligns with Indonesia Climate Change Sectoral Roadmap ICCSR Synthesis Report, Republic of Indonesia, Dec 2009; and World Bank, Global Gas Flaring Reduction, a Public-Private Partnership, 2005 Good Practice' for its atmospheric emissions during operations. • PTTEP AA also considers the application of IFC Environmental, Health, and Safety Guidelines - Offshore Oil and Gas Development June 5 2015 as representing industry 'Good Practice'.	2*	B*	L

20	Air Emissions	Power generation for machinery and vessel operations and engine use of FPSO, support vessels and helicopters resulting in the release of emissions, including greenhouse gas	Given the remote location, minor pollution of the air shed and reduction in air quality due to emissions (CO_2, VOC, No_x, So_x, CO, CH_4)
			Contribution to the cumulative build-up of GHG in the atmosphere.
				B	2	L	Potential risks associated with the release of air emissions (GHG) will be managed via implementation of the following measures:
							• As appropriate to class and in accordance with *Protection of the Sea (Prevention of Pollution from Ships) Act 1983* – Part IIID, MARPOL Annex VI- Marine Orders – Part 97: Marine Pollution Prevention - Air Pollution, the FPSO and supply vessels will:
							  • Hold an International Air Pollution Prevention (IAPP) Certificate.
							  • Will use low sulphur diesel (<3.5% m/m) where possible.
							  • Comply with relevant NGERs and NPI reporting records.
							• Ensuring that the PTTEP AA Montara Structural Integrity Management Manual - WHP and FPSO Topsides (MV-MN-D33-812058) be implemented to ensure inspection, monitoring and maintenance of WHP and FPSO machinery and equipment (e.g. generators, compressors and turbines) to ensure good working order, in line with the manufacturer's specifications, to ensure efficient combustion.
								B	2	L

21	Air Emissions	Release of ozone depleting substances.	Contribution to the cumulative build-up of ozone depleting substances in the atmosphere.	B	1	L	Potential risks associated with the release of air emissions (ozone depleting substances) will be managed via implementation of the following measures: • Implementation of the PTTEP Montara Refrigerant and Ozone Depleting Substance Management Plan (MV-HSE-D30-813784), which details maintenance and routine checks, storage, transportation and reporting in line with regulatory requirements for FPSO equipment.	B	1	L
22	Air Emissions	Venting of gas containing VOCs from storage infrastructure resulting in release of emissions.	Minor reduction in air quality and contribution to the cumulative build-up of GHG in the atmosphere.	B	2	L	Potential risks associated with the release of air emissions (VOCs) will be managed via implementation of the following measures: • Ensuring that the PTTEP AA Montara Structural Integrity Management Manual - WHP and FPSO Topsides (MV-MN-D33-812058) be implemented to ensure inspection, monitoring and maintenance of WHP and FPSO equipment, including all storage infrastructure. • Complying with the PTTEP AA's Montara Venture Energy and Emissions Estimation Procedure (MV-HSE-D30-814057), which includes recording and reporting requirements of emissions to ensure compliance with National Greenhouse and Energy Reporting (NGER) and National Pollutant Inventory (NPI) reporting records.	B	2	L

6 IMPLEMENTATION STRATEGY

6.1 OVERVIEW

All activities associated with the Montara Operations EP are identified, planned and implemented in accordance with relevant legislation, commitments within the Environment Plan and internal PTTEP AA health and safety standards and procedures. Processes are in place to verify that these controls and requirements are being implemented to manage environmental impacts and risks associated with the proposed activities to ALARP.

For each environmental aspect and associated environmental risks and impacts (identified and assessed in the Environmental Impacts and Risks Evaluation of the EP) specific environmental performance outcomes, controls, environmental performance standards and measurement criteria have been developed. The control measures (outlined in Section 5) will be implemented in accordance with the relevant environmental performance standards to achieve the environmental performance outcomes. The specific measurement criteria provide the evidence base to demonstrate that the environmental performance standards and outcomes are achieved.

The implementation strategy detailed in the Montara Operations EP identifies the roles/responsibilities and training/competency requirements for all personnel (PTTEP AA and its contractors) in relation to implementing controls, managing non-conformance, emergency response and meeting monitoring, auditing, and reporting requirements during the activity.

PTTEP AA and its contractors will undertake a program of periodic monitoring, audit and review during the activity. The objective of the monitoring, audit and review programme is to ensure that the management of environmental impacts and risks is regularly monitored against the performance outcomes, standards and criteria in the Montara Operations EP. Monitoring and measurement of environmental performance must be appropriate to the activity and the results systematically recorded. These activities assist PTTEP AA to review environmental performance over time with a view to continuous improvement of environmental management systems and implementation strategies.

6.2 RECORD KEEPING & ASSURANCE

6.1.1 Record Keeping

PTTEP AA shall store and maintain the following documents and records:

(a) the Montara Operations EP;

(b) revisions to the EP;

(c) written reports (including monitoring, audit and review reports) about environmental performance, or about the implementation strategy, under the EP;

(d) records of emissions and discharges into the environment made in accordance with the EP;

(e) records of calibration and maintenance of monitoring devices used in accordance with the EP;

(f) records and copies of reports under regulations 26 and 26A of the OPGGS(E)R, relating to reportable incidents; and regulation 26B of the OPGGS(E)R, relating to recordable incidents.

6.1.2 Assurance

The PTTEP Risk and Assurance Framework (M12-500003-CORP) defines assurance as “A statement or indication of confidence about whether business objectives have been achieved within acceptable degree of residual risk”. All critical areas of the business are subjected to the assurance process. The various assurance activities are monitoring, review, independent review and audit. The hierarchy of assurance activities is shown in Figure 6.1.

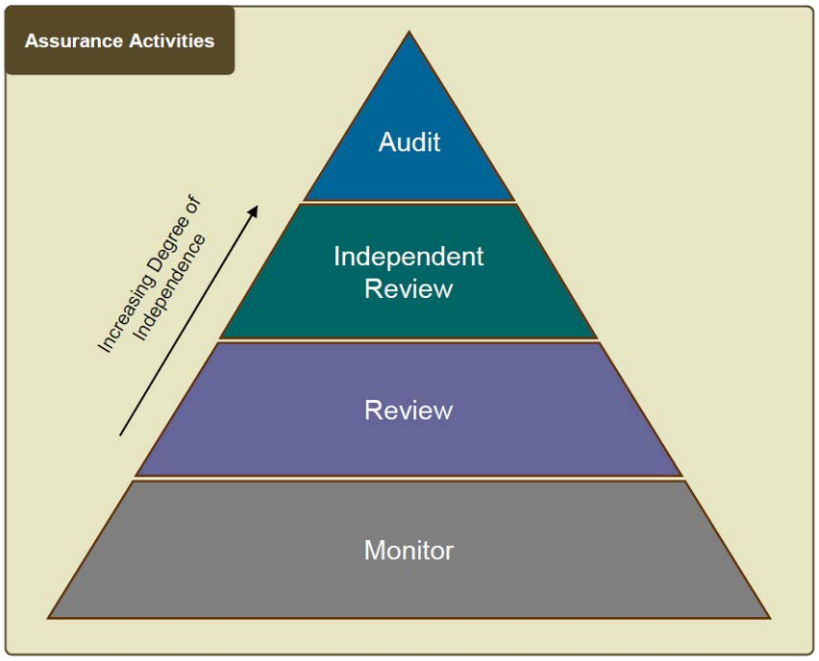

Figure 6.1 Assurance Activities as defined in the PTTEP AA Risk Assurance Framework

The definition of these assurance activities is shown in Table 6.1 below.

Table 6.1 Assurance activity definitions

Assurance Activity	Definition
Audit	An assurance activity that involves an independent systematic evaluation of a person, system, process, parts or all of an entity with the goal to determine degree of compliance.
Independent review	An assurance activity which verifies whether activities and tasks have been carried out in accordance with operational and financial authorisation (or licence) conditions.
Review	An assurance activity that involves routine and regular risk-weighted evaluation to selected parts of the business or processes, to determine efficiency of controls and facilitate continuous improvement.
Monitor	The continual checking, supervising, observing and determining the status in order to identify change from the performance level required or expected.

The Risk and Assurance Framework is implemented in conjunction with the Audit and Review Standard (SSHE-106-STD-700) to ensure that PTTEP AA activities are the subject of a series of assurance activities annually on a risk basis.

The focus of individual assurance activities are determined by risk and each considers both compliance with the established management system and the adequacy of the management system. Environmental assurance activities also focus on maintaining the demonstration of ALARP in terms of risk assessment and environmental management.

Incidents of non-compliance which require external reporting will be initially addressed as part of PTTEP AA's Incident Reporting and Investigation Management Procedure (S32-500311-CORP). All non-conformance will reported in the PTTEP AA electronic action tracking system (cintellate) to ensure corrective and preventative actions are identified and tracked to completion.

6.3 NON-CONFORMANCE INVESTIGATION AND CORRECTIVE ACTION

All environmental hazards and incidents are reported in accordance with PTTEP AA's Incident Reporting and Investigation Procedure (S32-500311-CORP). The Management Standard requires the following:

- all incidents are reported and investigated to the appropriate level;
- operational non-compliances which require external reporting to be reported and investigated to the appropriate level;
- recommendations to prevent recurrence are identified, shared and implemented;
- legal reporting requirements in the countries where an incident occurs are met; and
- PTTEP AA incident reporting and management requirements are met.

This approach will enable PTTEP AA to take valuable learnings from any incidents identify and implement corrective actions to minimise the risk of the incident reoccurring. This will also allow PTTEP AA to continuously improve its safety standards and safety performance record.

6.4 MANAGEMENT OF CHANGE

PTTEP AA's assets and any modification during the operational phase are required to follow the PTTEP AA Management of Change (MOC) Procedure (IC-MN-D33-811976). The purpose of the MOC Procedure is to define minimum requirements for managing permanent and temporary changes to any work process, facility or operations to ensure that any risk of hazard arising from the change is identified, assessed and controlled.

All engineering changes are managed via the Engineering Change Request (ECR) Procedure (D34-501161-FACCOM), as referenced within the MOC Procedure. All ECRs are forwarded to the PTTEP AA SSHE Manager for review via the electronic ECR Management Tool. Section 2 of the ECR Management Tool directs the SSHE Manager to evaluate potential changes to environmental impact and risk, as well as the requirements for revision and resubmission of an in-force EP in alignment with Regulation 17 of the OPGGS (E) Regulations.

Where the engineering change has the potential to create or increase environmental impacts or risks, the ECR is not endorsed by the SSHE Manager until the outcomes of the environmental impact and risk assessment are complete, and where applicable, additional control measures are implemented to manage potential environmental impacts to ALARP and acceptable levels.

The process by which a change is evaluated against environmental impacts and risks and regulatory revision triggers is detailed within the SSHE Risk Management Procedure (S32-501965-CORP) and is documented within the *Environment Plan MOC Impact Assessment Form*.

For administrative changes to operational procedures or systems that manage environmental impacts and risks, the PTTEP AA document control system provides for a cross-disciplinary review and sign-off process to ensure that changes that have the potential to create or increase environmental impacts or risks are managed in accordance with requirements of the in-force EP where applicable.

6.5 REVIEW AND UPDATE OF THE PLAN

The Montara Operations EP is a working document that requires regular review and update throughout the operational life of the MDP facilities. Division 2.4 of the OPGGS(E)R, requires the operator to submit a proposed revision to an EP before the commencement of any new activity or any significant modification, change or new stage of an existing activity that is not contemplated by the EP for example:

- decommissioning activity;

- major changes to equipment used at the MDP facilities that significantly change the activities carried out as described in the EP.

Division 2.4 of the OPGGS(E)R also requires the operator to submit a proposed revision to the EP as soon as practicable after the occurrence of any significant new environmental impact or risk, or significant increase in an existing environmental impact or risk, that is not contemplated by the Plan or the occurrence of a series of new environmental impacts or risks, or a series of increases in existing environmental impacts or risks, which, taken together, amount to the occurrence of:

- a significant new environmental impact or risk; or
- a significant increase in an existing environmental impact or risk; that is not contemplated by the EP.

Division 2.4 of the OPGGS(E)R further requires the operator to submit a proposed revision before the end of each 5 years as well as at any time upon request by NOPSEMA.

In parallel to this revision of the EP, PTTEP AA has also initiated the comprehensive 5-yearly review of the MDP Operations EP. This work is currently underway. It is anticipated that this will be completed to allow submission of the document in early 2018.

7 EMERGENCY RESPONSE ARRANGEMENTS

7.1 CRISIS AND EMERGENCY MANAGEMENT PLAN

PTTEP AA has prepared a Crisis and Emergency Management Plan. The purpose of the plan is to clearly define the roles and responsibilities of the Emergency Management Team during an actual or potential incident that could create and emergency and/or crisis for PTTEP AA and its stakeholders. The plan identifies the major risks potentially impacting business operations and local communities, describes the response strategies and management organisation for a number of potential emergencies, sets out roles and responsibilities of key personnel, contains internal and external notification procedures and describes how PTTEP AA will establish communications in the event of an emergency. The EP covers all operations and activities carried out by PTTEP AA including contracted services for incidents of (but not limited to) the following nature:

- Operational Incidents;
- Environmental incidents;
- Security Incidents;
- Health & Safety Incidents; and
- PTTEP AA Personnel Incidents.

7.2 EMERGENCY RESPONSE ARRANGEMENTS

Crisis and emergency response is managed by a hierarchy of teams within PTTEP AA, supported by the resources of PTTEP's Head Office in Bangkok, Thailand. The structure and operations of the PTTEP AA Emergency Management Team (EMT) are consistent with the Oil Spill Response Incident Control System (OSRICS) as set out in the National Marine Oil Spill Contingency Plan. The EMT addresses tactical response issues in an emergency, interfacing with and providing information to internal and external parties including the Crisis Management Team (CMT), Contractors, Joint Venture Partners and the relevant regulatory authorities.

The Control Agency for an oil spill response is the government agency or company assigned by legislation, administrative arrangement or within the relevant contingency plan to control response activities to an oil spill. While the Control Agency is responsible for control of response activities, including appointing the Incident Controller, the Control Agency may have arrangements in place for another government agency or company to provide oil spill response services during an emergency. In the event of a spill potentially reaching international waters, PTTEP AA will contact the Department of Foreign Affairs and Trade (DFAT) to ensure the appropriate notifications are made.

Reporting and notification will be in accordance with PTTEP AA's Incident Reporting and Investigation Procedure.

7.3 OIL POLLUTION EMERGENCY PLAN

PTTEP AA has developed a project specific Montara Operations Oil Pollution Emergency Plan (MV-HSE-D30-811606) which details specific requirements for an effective response in the unlikely event of an unplanned release of petroleum products or chemicals used in the MDP and associated activities. The MDP Operations OPEP details the response required from PTTEP AA, as the operator, and through the National Response Plan (NatPlan) and the Australian Marine Oil Spill Centre (AMOSC). Specifically, the MDP Operations OPEP details the incident response actions, describes arrangements and reporting relationships for command, control and communication, and provides interfaces to emergency specialist response groups, statutory authorities and other external bodies. The plan details assurance activities for confirming oil spill response capabilities are in place.

7.4 SPILL RESPONSE STRATEGY

Response strategies have been developed on the basis of good current industry practice, predictive modelling and effectiveness during the Montara drilling incident in 2009. The response strategies that may be implemented are dependent on the volume of hydrocarbon, location of the spill event, environmental conditions at the time of the spill, and sensitivities in the EMBA.

For all levels, source control is undertaken to ensure no further release of hydrocarbons to the marine environment. There are six potential response options:

1. **Monitor and Evaluate**: this is applicable to all spill scenarios. In the event that a surface spill does not threaten any environmental sensitivity, it may be the only strategy that is deployed.
2. **Dispersant Application**: samples of Montara hydrocarbons have undergone weathering and dispersant testing. During a Level 3 spill incident, dispersant amenability testing and a NEBA assessment will be undertaken to confirm the applicability of the strategy. This strategy is likely to be the primary strategy for the reduction of hydrocarbons reaching environmental sensitivities.
3. **In-situ Burning**: this strategy may be considered in the event of a loss of well control if there are high concentrations of surface oil on the sea surface and the environmental conditions are suitable.
4. **Containment and Recovery**: this strategy may be useful to recover any persistent weathered residues floating on the sea surface and prevent them from reaching shore providing sea states permit. Weathering assessment of Montara crude oil samples have been undertaken to determine the properties of the weathered product, in addition to the observations of weathering during the Montara incident in 2009, these are detailed in the EP.
5. **Protection and Deflection**: this strategy will only be deployed when surface hydrocarbons threaten environmental sensitivities due to the failure or inability to deploy dispersant application and/or containment and recovery techniques. A NEBA assessment will determine whether deployment of the strategy will have an overall environmental benefit to protecting shorelines which may be sensitive to the protection and deflection activities.
6. **Shoreline Clean-up**: this is a strategy of ‘last resort’ and will only be deployed in the event of surface hydrocarbons impacting shorelines. A NEBA assessment will determine whether deployment of the strategy will have an overall benefit to shorelines (which may be sensitive to shoreline clean-up techniques).
7. **Oiled Wildlife Response**: this strategy will be considered for deployment where surveillance activities identify the potential for marine fauna to be impacted by the spill.
8. **Waste Management**: this strategy will be required to support all active response strategies.

7.5 OPERATIONAL AND SCIENTIFIC MONITORING PROGRAM

PTTEP AA has prepared an Operational and Scientific Monitoring Program (OSMP) for its activities in the Timor Sea for use in the event of a large spill. Together the OPEP, OSMP and EP provide a clear, robust approach to efficiently and effectively manage a potential hydrocarbon spill while achieving PTTEP AA’s environmental performance criteria. Specifically, the OSMP provides guidance on how and when monitoring data will be collected in the event of a Level 2 or Level 3 hydrocarbon spill.

7.6 CYCLONE RESPONSE PLAN

PTTEP AA has a prepared Cyclone Response Plan (D30-504466-FACCOM). The purpose of the Cyclone Response Plan is to provide information about the actions to be coordinated in the event of a cyclone affecting PTTEP AA operated and contractor operated facilities. The EP provides an overview of cyclone preparedness and response coordination for evacuation of personnel from facilities operating in the Montara field.

8 STAKEHOLDER CONSULTATION

8.1 OVERVIEW

PTTEP AA is committed to engaging in an open and transparent manner with all relevant stakeholders. This section details the consultation that has been conducted by PTTEP AA with 'relevant persons' in relation to the Montara Operations.

PTTEP AA is committed to:

- Maintaining positive working relationships with all relevant stakeholders;
- Keeping stakeholders abreast of our activities;
- Seeking feedback from stakeholders to inform our decision-making process and activities; and
- Proactively managing any concerns or issues raised by stakeholders.

PTTEP designs and implements its stakeholder engagement programs with regard to the lessons learned from previous campaigns, knowledge sharing with industry participants, the policy guidelines of regulators and industry associations, and in line with community expectations. Engagement is also guided by Division 2.2A, Regulation 11A and Regulation 16 of the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009*.

The organisation's Issues and Stakeholder Management System (ISMS) (2017) has helped to standardise the analysis, planning, monitoring and evaluation of stakeholder engagement efforts.

8.2 RELEVANT STAKEHOLDERS

In line with Regulation 11A of the OPGGS, 'relevant persons' identified are those that:

- undertake activities in the vicinity of the Montara Operations. This includes organisations that may have members that undertake activities in the vicinity of the activity;
- have a role in regulating activities that take place in the vicinity of the Montara Operation activities; and
- any other person or organisation identified as having interests or activities that potentially may be impacted by the Montara Operations or identified as relevant by PTTEP AA.

PTTEP reviewed the list of relevant stakeholders identified in the current EP, which was approved in 2013, to determine if the current list of stakeholders still reflects the full breadth of 'relevant stakeholders'. It was determined that changes in the activity have not resulted in changes to the list of 'relevant stakeholders'. However, new stakeholders have emerged over the past five years, which are now reflected in the list of relevant stakeholders in Table 8.1.

Table 8.1 Identified Relevant Stakeholders

Commonwealth Government	
Australian Fisheries Management Authority	Department of Industry, Innovation and Science (formerly Department of Resources, Energy and Tourism
Australian Hydrographic Service	National Native Title Tribunal[1]
Department of Defence	Department of Foreign Affairs and Trade
Australian Maritime Safety Authority	Department of Communications and the Arts[1]
Department of Immigration and Border Protection, Australian Border Force (formerly Border Protection Command)	Department of Environment and Energy (formerly Department of Sustainability, Environment, Water, Population and Communities)
Department of Agriculture and Water Resources (formerly Department of Agriculture, Fisheries and Forestry)	

Western Australian Government	
Department of Biodiversity, Conservation and Attractions (formerly Department of Environment and Conservation)	Department of Water and Environmental Regulation (formerly Environmental Protection Authority)
Department of Primary Industries and Regional Development (Fisheries Division) (formerly Department of Fisheries)	Department of Mines, Industry Regulation and Safety (formerly Department of Mines and Petroleum)
Department of Transport	Shire of Wyndham East Kimberley[1]
Northern Territory Government	
Department of Primary Industry and Resources (Mines and Energy and Primary Industry and Fisheries)	Northern Territory Environmental Protection Authority[1]
Department of the Chief Minister	Department of Tourism and Culture[1]
Department of Infrastructure, Planning and Logistics	
Fishing Industry	
Commonwealth Fisheries Association	Western Australian Fishing Industry Council
Northern Territory Seafood Council	Australian Fishing Trade Assoication[1]
Northern Prawn Fishery Industry Pty Ltd	Australian Southern Bluefin Tuna Assoiaction[1]
Northern Prawn Fishery (QLD) Trawl Association[2]	Western Australian Northern Trawl Owners Association[2]
Pearl Producers Association	Northern Wildcatch Seafood Australia[1]
Individual license holders in State managed fisheries (Northern Shark Fishery, North West Slope Trawl Fishery)	Individual license holders in Commonwealth managed fisheries (Northern Prawn Fishery, Western Tuna and Billfish Fishery, Western Skipjack Tuna Fisheries, Southern Bluefin Tuna Fishery)
Oil and Gas Industry (adjacent oil and gas operators)	
Sinopec Oil and Gas Australia Pty Ltd	Eni Australia Ltd[1]
Vulcan Exploration Pty Ltd	Finder Exploration Pty Lty[1]
Bounty Oil and Gas NL	
Other Relevant Organisations	
Darwin Port Authority	Tourism Western Australia[1]
Oil Spill Response Limited	Australia Northwest Tourism[1]
Australian Marine Oil Spill Centre	The Wilderness Society[1]
Recfishwest	Environs Kimberley[1]
WA Conservation Council	Nextgen Networks[1]
World Wildlife Fund	Telstra[1]

[1]New stakeholders identified during the revision of the EP.
[2]Organisations that were previously contacted however are no longer active.

PTTEP AA has developed and maintained strong relationships over the years with a range of stakeholders, which is an important legacy of the 2009 Montara incident. Many of these stakeholders have expressed an interest in being informed about PTTEP AA's future activities, and have been included in consultation processes associated with this EP. This includes several organisations or associations (e.g. World Wildlife Fund and WA Conservation Council) with a potential interest in PTTEP AA's operations, despite not having any direct interest in the specific activity described in this EP.

8.3 CONSULTATION APPROACH

This section describes the approach that PTTEP AA employed to engage with stakeholders during preparation and implementation of this EP, in accordance with the requirements of Regulation 11A and 16 of the OPGGS (Environment) Regulations.

A summary of activities and responses from relevant persons and an assessment of the merits of any objection or claim made by a relevant persons is included in Appendix B.

8.3.1 Consultation to Date

Consultation with stakeholders commenced for the Montara Development Project (MDP) in early 2008. Consultation intensified during the Montara Commission of Inquiry and in 2010 with the development and implementation by PTTEP AA of the Montara Action Plan. Further engagement with stakeholders included sharing of the key findings from the Montara Action Plan with the industry, industry bodies and multiple government conferences.

Consultation was conducted by PTTEP AA in regards to the Montara Operations when this EP was initially accepted on 23 November 2011. On 1 January 2012, NOPSEMA assumed the role of administrator of the OPGGS(E)R. On 15 December 2012 NOPSEMA requested PTTEP AA submit a revised EP in accordance with Regulation 18(8) of the OPGGS(E)R. Further consultation was conducted via a letter and fact sheet, which was issued to relevant stakeholders via email and post on 16 January 2013. The initial communication was followed-up with phone and email consultation with stakeholders. Details of the feedback received and the responses from PTTEP AA are provided in Appendix A.

PTTEP AA has been committed to ongoing stakeholder engagement. This has involved regularly updating the company's website (www.pttep.com) with information on the MDP.

In addition, PTTEP AA has submitted multiple EP's to NOPSEMA. Each of the EPs has involved consultation, including:

- Cash-Maple Exploration Drilling EP 2013
- Dillon South Exploration Drilling EP 2013
- Montara Production Drilling EP 2013
- Montara Production Drilling EP 2017

For each EP, a fact sheet has been distributed to key stakeholders via email and post. In each instance, the fact sheet provided a general overview of the proposed and current PTTEP activities. This initial communication was followed-up with phone calls and emails to key stakeholders, to identify any concerns or issues with the current and proposed PTTEP activities.

The feedback received from stakeholders for the various EPs has been fed into the development of this EP, including the controls that have been selected to minimise potential impacts. All communications have been documented in detail and maintained by PTTEP AA within a stakeholder consultation register.

In late-August 2017, stakeholders were contacted to inform them that a revision of the EP was underway in line with the improvement notice issued by NOPSEMA, as well as providing an update on PTTEP AA's other activities. Two emails were distributed: (1) to stakeholders that were recently identified as being relevant during the preparation of this EP, and (2) to stakeholders that had already been engaged by PTTEP AA during previous consultation campaigns. The email text, and resulting correspondence is contained in Appendix A.

Stakeholders were again contacted in mid-November 2017. Stakeholders were contacted via email, and were provided a factsheet, which detailed the revisions made to the Montara Operations EP. The email text, factsheet and resulting correspondence is contained in Appendix A. No concerns or issues have been raised by stakeholders to date.

PTTEP AA's corporate website was updated to reflect the information provided to stakeholders in November 2017.

8.4 CONSULTATION RECORDS

The information presented in Appendix B summarises the consultation process with the identified 'relevant persons' and the outcomes achieved to date, noting this consultation process remains ongoing. In most instances, stakeholders requested to be updated on the development of MDP, and generally on the activities of PTTEP AA. This has occurred through a range of methods (as described above).

Key topics raised by stakeholders during the engagement process included:

Oil spill response

- A number of stakeholders expressed an interest in PTTEP AA's oil spill response process, which is outlined in its MDP Operations OPEP. PTTEP AA received feedback from AMOSC, AMSA, OSRL, WA Department of Transport, WA Department of Primary Industries and Regional Development (formerly Department of Fisheries), WA Department of Biodiversity Conservation and Attractions (formerly Department of Parks and Wildlife), WA Department of Water and Environmental Regulation (formerly Department of Environmental Regulation) WA Department of Mines, Industry Regulation and Safety (formerly Department of Mines and Petroleum) and NT Department of Infrastructure, Planning and Logistics – Marine Branch which has been incorporated into the MDP Operations OPEP.

Interaction with other operators/ operations

- Western Australian Fishing Industry Council (WAFIC) and the Department of Primary Industries and Regional Development (Fisheries) expressed an interest in PTTEP AA's consultation with relevant license holders and operators. The Department of Primary Industries and Regional Development (formerly Department of Fisheries) were satisfied with the consultation undertaken with individual license holders in the relevant fisheries.

Protection of the environment

- The Department of Water and Environmental Regulation (formerly Environmental Protection Authority) expressed interest in the mitigation measures in place to protect the environment. The Department recommended, PTTEP AA plan for post spill scientific monitoring and if not already completed, complete a quantitative environmental baseline of the MDP environment prior to production commencing.

8.5 ONGOING CONSULTATION

PTTEP AA is committed to engaging with stakeholders in an open and proactive manner throughout the duration of the MDP.

Key ongoing consultation activities will include:

- notification to relevant stakeholders on any material changes to the EP via preferred channels (email or phone);
- annual updates on PTTEP AA's activities in relation to the MDP to the relevant stakeholders via preferred channels (email or phone);
- regular updates to PTTEP AA's website (www.pttep.com)
- notification to relevant stakeholders at the completion of the activity. This will provide an opportunity for PTTEP AA to confirm with stakeholders the outcomes of the activity.

All stakeholders identified in Table 8.1 will be engaged through the process outlined above, including those that have recently been identified as 'relevant'. The list of stakeholders contained in Table 8.1 will be reviewed annually to determine if modifications are required.

In addition, stakeholders have been provided contact details (including an email address, postal address and telephone number) that can be used to ask questions or lodge concerns. These contact details are also available on PTTEP AA's website and on the factsheet sent to stakeholders.

PTTEP AA is conscious that the organisation is undertaking a range of activities as part of its MDP, and is keen to minimise potential fatigue as well as confusion amongst stakeholders. To this end, where possible and appropriate, PTTEP AA will contact stakeholders about the full breadth of PTTEP AA's activities rather than on an activity-by-activity basis. The aim is to facilitate feedback from stakeholders in a timely manner, and reduce the burden placed on stakeholders.

9 DEFINITIONS AND ABBREVIATIONS

Abbreviation/Definition	Description
AFMA	Australian Fisheries Management Authority
ALARP	As Low As Reasonably Practicable
AMSA	Australian Maritime Safety Authority
API	American Petroleum Institute
BIA	Biologically Important Area
BOD	Biological Oxygen Demand
BOP	Blowout Preventer
CEFAS	Centre for Environment, Fisheries and Aquaculture Science
CHARM	Chemical Hazard Assessment and Risk Management
CMRs	Commonwealth Marine Reserves
CO	Carbon monoxide
CO_2	Carbon dioxide
DA	Designated Authority
DAI	Defined Acceptable Impact
DAFF	Department of Agriculture, Fisheries and Forestry
dB	Decibel
DEWHA	Department of Environment, Water, Heritage and the Arts (now Department of Environment and Energy)
DoAWR	Department of Agriculture and Water Resources
DoEE	Department of the Environment & Energy (formerly Department of the Environment)
DoF (WA)	Department of Fisheries (WA)
DP	Dynamic Positioning
DSD	Department of State Development
EMBA	Environment that May Be Affected
EP	“Environment Plan” – refers to the Montara Production Drilling Environment Plan
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999* (Cth)
ESD	Ecological Sustainable Development
FPSO	Floating Production, Storage and Offtake facility
Hz	Hertz
IAP	Incident Action Plan
IMP	Invasive Marine Pests
ISB	In situ Burning
IPA	Indigenous Protected Areas
ITOPF	International Tanker Owners Pollution Federation
KEFs	Key Ecological Features
Km	Kilometres
LAT	Lowest Astronomical Tide
MDP	Montara Development Project

Abbreviation/Definition	Description
MDP area	Refers to activity area for the development of Montara, Skua, Swift and Swallow fields, located in the Timor Sea in Production Licence Areas AC/L7 and AC/L8.
M	Metre
Mm	Millimetre
MNES	Matters of National Environmental Significance
MARPOL	Marine Pollution Convention (International Convention for the Prevention of Pollution from Ships)
MODU	Mobile Offshore Drilling Unit
MoU	Memorandum of Understanding
MPAs	Marine Protected Areas
NADF	Non Aqueous Drilling Fluid
NEBA	Net Environmental Benefit Analysis
Nm	Nautical mile
NMR	North Marine Region
NWMR	North West Marine Region
NOPSEMA	National Offshore Petroleum Safety and Environmental Management Authority
OCNS	Offshore Chemical Notification Scheme
OPGGS	*Offshore Petroleum and Greenhouse Gas Storage*
OPGGSA	*Offshore Petroleum and Greenhouse Gas Storage Act 2006*
OPGGS(E)R	*Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009*
OPEP	Oil Pollution Emergency Plan
OWS	Oily Water Separator
PAH	Polyaromatic Hydrocarbons
PMST	Protected Matters Search Tool
PNEC	Predicted No Effect Concentration
Ppm	Parts per million
Ppb	Parts per billion
PTTEP AA	PTTEP Australasia (Ashmore Cartier) Pty Ltd being the operator or the title holder of AC/L7 and AC/L8 or being the Australian subsidiaries of PTT Exploration and Production Public Company Ltd as the context requires
RAMSAR	International Convention on Wetlands of International Importance
ROC	Residual on Cuttings
SOPEP	Shipboard Oil Pollution Emergency Plan
SSHE	Safety, Security, Health and Environment
SSHE MS	Safety, Security, Health and Environment Management Systems
VSP	Vertical Seismic Profile
WAFIC	Western Australian Fishing Industries Council
WBM	Water based mud

10 REFERENCES

Note: the below list of references includes all references cited in the full Environment Plan.

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APPENDIX A – RISK ASSESSMENT METHODOLOGY FOR SPILLS, SPILL RESPONSE, PFW DISCHARGES AND FLARING

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1 ENVIRONMENTAL RISK ASSESSMENT METHODOLOGY

1.1 INTRODUCTION

This section describes the environmental risk assessment methodology adopted specific to:

(a) a potential Hydrocarbon Spill: Loss of well control (well blow out) – Crude – Maximum 236,349 84,960 for the proposed activity of re-entering and drilling H5 ST-2 well ,

(b) Discharges to the Atmosphere: Release of emissions from flaring, and

(c) Discharges to the Marine Environment: Produced Formation Water

It also outlines the methodology for the management and mitigation measures that will be implemented to minimise their impact.

Pursuant to Regulation 4 of the OPGGS(E)R, environmental impact is taken to mean any change to the environment, as described in *Section 5* of this Plan, whether adverse or beneficial, that wholly or partially results from the activity. As required by Regulation 13(5) and 13(6), analysis and evaluation is conducted in this EP to demonstrate that the identified risks and impacts associated with this activity are reduced to ALARP, are of an acceptable level and consider all operations of the activity, including potential emergency conditions.

This section demonstrates the risk assessment methodology specifically for (a), (b) and (c) listed above and specifically provides:

- An account of the processes undertaken by PTTEP AA to evaluate the potential environmental impacts and risks to the particular values and sensitivities identified within *Section 5* of this EP associated with the petroleum activity;
- The range of control measures for reducing potential environmental impacts and risks to ALARP and acceptable levels, and;
- ALARP and acceptability justification for the level of risk reduction delivered by the selected control measures.

The outcome of the risk assessment and a discussion of various risk mitigation options with respect to the ALARP approach are discussed in *Section 7*. Activities have been systematically assessed to identify potential environmental impacts on particular values and sensitivities and the level of risk associated with that potential impact. This process is required to determine the ALARP decision context and the subsequent assessment techniques applied to demonstrate potential environmental impacts are managed to ALARP.

The environmental risk assessment process, as defined in the PTTEP AA SSHE Risk Management Procedure (S32-501965-CORP), is comprised of several stages that are documented within this EP (Figure A.1). These stages are detailed in the following sections:

- Hazard Identification process, including:
  - Identifying specific tasks associated with the activity - *Section 4*;
  - Understanding the existing environment – *Section 5*;
  - Identifying which aspects could cause a potential environmental impact – *Section 7*;
- Qualitative Analysis – *Section 7*, including:
  - Identifying potential hazards associated with each aspect of the activity;
  - Identification and evaluation of appropriate Control Measures in relation to the overall context of the activity;
  - Assess predicted residual risk (with the application of Control Measures);
  - Demonstration of ALARP; and
  - Determination of risk acceptability.

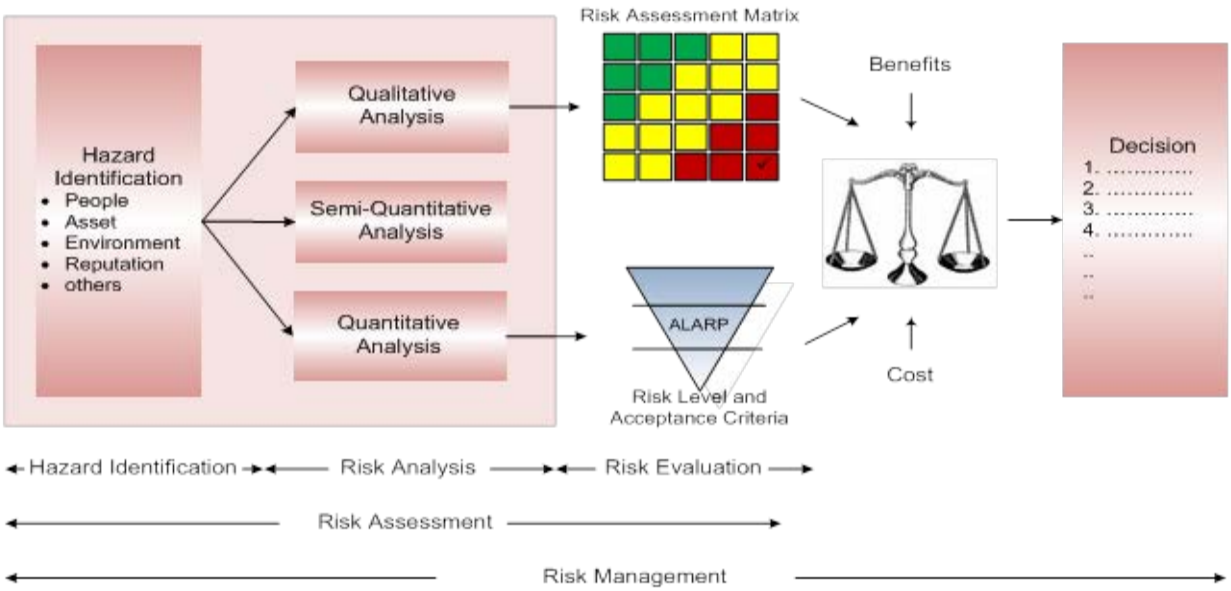

Figure A.1 Risk Assessment Process

1.2 RISK ASSESSMENT OF ENVIRONMENTAL IMPACTS (REGULATION 13(5))

1.2.1 Risk Assessment Workshop

Based on the environmental hazard identification activities (a), (b) and (c) listed above and risk assessment (ENVID) workshops, the risk assessment, has been revised and updated. The revision has been undertaken by a core team of experienced and professional staff in PTTEP AA, and environmental consultants.

1.2.2 Risk Assessment Methodology

The environmental risk assessment methodology is shown in Figure D1 and is based on PTTEP AA's risk management process as outlined in the SSHE Risk Assessment Standard (SSHE-106-STD-400). The primary objective of SSHE Risk Management is to ensure that the hazards, to which people, environment and asset are exposed, are systematically identified, risks are evaluated and measures for reducing them to levels that are ALARP are put in place, documented and maintained. The PTTEP AA risk management process has been developed with reference to Australian Standards, specifically AS/NZS ISO 31000:2009 (AS/NZS 2009).

The risk assessment methodology is described in the sections below.

1.2.3 Hazard Identification

Hazard identification involves identification of potential sources of risk i.e. aspects of the activity which could cause potential environmental impacts to the particular values and sensitivities identified within the Environment That May be Affected (EMBA) by the petroleum activity.

1.2.4 Potential Sources of Risk

Activities were reviewed to identify the potential effects that they could have on various aspects of the environment. A systematic assessment of the impact that these effects could have, upon environmental, socio-economic and cultural receptors, was then undertaken.

The assessment considered normal and abnormal emergency conditions including, for example, the occurrence of cyclones.

1.2.5 Aspects and Receptors

Aspects of the activities were identified from the hazard identification process to have the potential to affect the environment, They include:

- Disturbance to the marine environment including impacts on benthic habitats and communities, noise and light emissions;
- Atmospheric emissions;
- Wastes management; and
- Discharges to the marine environment including all substances identified as potentially entering the water column. For each of these aspects the environment that may be affected was identified including:

  (i) ecosystems and their constituent parts, including people and communities; and

  (ii) natural and physical resources; and

  (iii) the qualities and characteristics of locations, places and areas; and

  (iv) the heritage value of places;

  and includes

  (v) the social, economic and cultural features of the matters mentioned in (i), (ii), (iii) and (iv) above.

1.2.6 Qualitative Analysis (Risk Assessment Matrix)

The qualitative analysis component assesses the aspects and particular values and sensitivities using a risk matrix (see Figure D.1 and Table D.1). Two key factors underpin the qualitative environmental risk assessment process:

- The likelihood of the particular values and sensitivities being impacted based on upon knowledge/historical data of similar events/incidents occurring within PTTEP AA or in the exploration and petroleum industry as a whole; and
- The severity of the consequences of the potential impact.

The qualitative analysis process is used to assign the consequence and likelihood of an impact occurring to a particular value or sensitivity and provides a relative level of risk. PTTEP AA's Risk Assessment Matrix is detailed in Table D.1.

This process provides contextual information to assess the suitability and number of control measures required to reduce potential impacts and risks (either direct or indirect) to ALARP and acceptable levels.

1.2.7 Assessment of Potential Consequence

To further supplement the environmental consequence definitions within Table D.1, and to provide specific regional context when undertaking the environmental risk assessment for the activities, additional definitions of the potential environmental impacts, including the level of severity, to particular values and sensitivities are presented in Table D.2. As such, the 'Environmental Effect' column within Table D.1 of the PTTEP corporate risk matrix has not been applied. . In evaluating the level of (worst-case) consequence of a potential event, the following factors have been considered (see Table D.2):

- Extent of impacts: Whether the impact affects the local or wider regional environment;
- Severity of Impacts;
- Duration & Frequency of the impact: How often the impact will occur and how long it will interact with the receiving environment; and
- Sensitivity of the receiving environment: Nature importance (local, national or international significance) and the sensitivity or resilience to change of the receptor that could be affected.

Additionally, to provide context and clarity when evaluating potential consequence, specific definition is provided on extent, severity, and duration of potential impacts, and of the relative sensitivity of the receiving environment and is presented in Table D.3.

1.2.8 Likelihood of Impact Occurrence

The likelihood (probability or frequency) of an impact occurring takes into account the effective implementation of proposed control measures. The likelihood of a top-level event occurring that could give rise to the impact is based upon knowledge/historical data of similar events/incidents occurring within PTTEP AA or in the industry as a whole. Definitions of likelihood are detailed in the risk assessment matrix (Table D.1).

1.2.9 Determining Residual Risk

The residual risk is determined by assessing the consequence of the potential impact in relation to a particular value or sensitivity and the likelihood of that consequence occurring with proposed control measures in place. The residual risk is an indicator of the relative overall risk posed to the environment and is used to place context around risk-related decision, such as the level and type of controls required to manage impacts to ALARP and acceptable levels, or indeed if a potential risk is acceptable in the context of the environment that may be affected.

1.3 ALARP AND ACCEPTABILITY

1.3.1 ALARP Decision Context

In alignment with NOPSEMA's ALARP Guidance Note (N-04300-GN0166, June 2015), PTTEP have adapted the approach developed by Oil and Gas UK (OGUK) (formerly UKOOA) Guidance on Risk Related Decision Making (Oil & Gas UK, 2014)[1] for use in an environmental context to determine the assessment technique required to demonstrate that potential impacts and risks are ALARP (Figure A.2). The application of this methodology also provides for context for the overall nature and scale of the activity in the context of its potential impacts and risks. Specifically, the framework considers impact severity based upon contextual information in relation to the following factors:

- activity type;
- potential (environmental) risk and (engineering / scientific) uncertainty; and
- stakeholder influence (objects or claims)

Once the overall decision context for each hazard is established it is allocated to one of the three "Types" defined below. This categorisation also aligns with the PTTEP AA approach to the low,

[1] Oil & Gas UK (2014) (formerly UKOOA) Guidance on risk-related decision making. Issue 2. Oil & Gas UK. London. 25 p.

medium and high residual risk levels as outlined in the SSHE Risk Assessment Standard (SSHE-106-STD-400) is shown in Figure D.2. When allocating a decision type, PTTEP AA also considers the timing of the activity in relation to seasonal sensitivities for matters protected under Part 3 of the EPBC Act, i.e., matters of national environmental significance (MNES).

A Type A (Low Risk) decision is made if the risk is relatively well understood, the potential impacts are low (including those to MNES when considering seasonal sensitivities), activities are well practised, and there is no significant stakeholder interest. However, if good practice is not sufficiently well-defined, additional assessment may be required.

A Type B (Medium Risk) decision is made if there is greater uncertainty or complexity around the activity and/or risk, the potential impacts are moderate (including those to MNES when considering seasonal sensitivities), or the risk generates several concerns from stakeholders. In this instance, established good practice is not considered sufficient and further assessment is required to support the decision and ensure the risk is ALARP.

A Type C (High Risk) decision typically involves sufficient complexity, high potential impact (including those to MNES when considering seasonal sensitivities), uncertainty, or stakeholder interest to require a precautionary approach. In this case, relevant good practice still has to be met, additional assessment is required, and the precautionary approach applied for those controls that only have a marginal cost benefit.

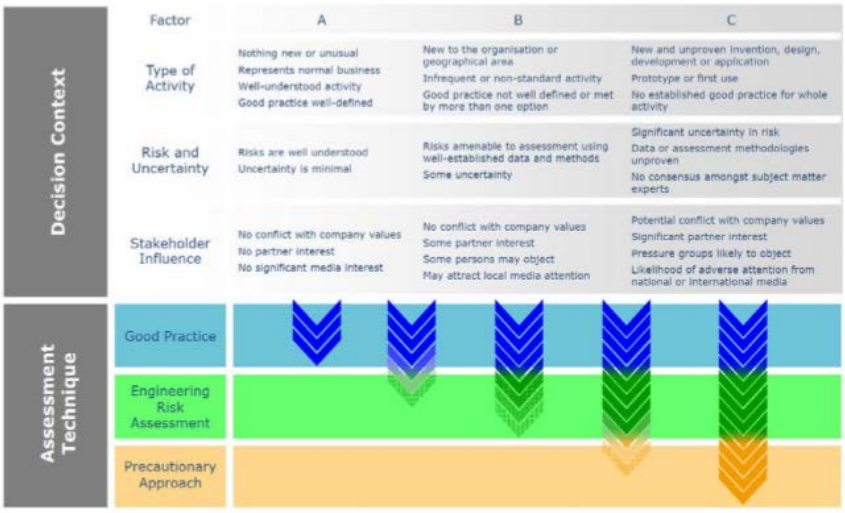

Figure A.2 Decision support framework used to demonstrate ALARP (NOPSEMA, 2015)

In accordance with the regulatory requirement to demonstrate that environmental impacts and risks are managed to ALARP, PTTEP has considered the above decision context in determining the level of assessment required. This is applied to each specific task associated with the activity as described in (a), (b) and (c) listed above.,

The assessment techniques considered include:

- good practice;
- engineering risk assessment; and
- precautionary approach.

1.3.2 Good Practice

In alignment with OGUK, PTTEP considers 'Good Practice' to be:

The recognised risk management practices and measures that are used by competent organisations to manage well-understood hazards arising from their activities.

'Good Practice' can also be used as the generic term for those measures that are recognised as satisfying the law. For this EP, PTTEP also considers sources of good practice to include (where relevant):

- Requirements from Australian Legislation and Regulations;
- Relevant Australian Government Policies & Guidance;
- Relevant International Conventions;
- Australian IUCN reserve management principles for Commonwealth marine protected areas and bioregional marine plans - conservation actions, objectives or a target in recovery plans/approved conservation advice for relevant listed threatened species - management plans, including features such as advice on permitted uses, objectives, targets, goals or key performance indicators for marine reserve areas;
- National water quality management strategy document (e.g. guidelines for marine water quality);
- Relevant conditions of approval set under other legislation;
- National and international requirements for managing pollution from ships;
- National biosecurity requirements; and
- Industry best practice guidance (see IFC, IOGP, IPIECA, APPEA, API etc)

If the decision context is categorised as 'Type A', PTTEP considers the application of 'Good Practice' to be sufficient to demonstrate potential impacts and risk are managed to ALARP and further assessment ('Engineering Risk Assessment') is not necessarily required to identify additional controls. However, PPTEP may apply additional controls (over and above 'Good Practice') when there is the potential to further reduce environmental impacts and risks for a small or negligible cost i.e., in relation to time, effort, money.

1.3.3 Engineering Risk Assessment

If the decision context is categorised as 'Type B', PTTEP will undertake an analysis of alternate and/or additional control measures to those identified by 'Good Practice'. Based on the various approaches recommended in OGUK, and in alignment with the NOPSEMA Environment Plan Decision Making Guideline (GL1721 Rev 3 May 2017), PTTEP believes the methodology most suited to demonstrate ALARP for potentially elevated (medium or higher) impacts and risks, is to undertake a cost-benefit analysis. The analysis is based upon:

- Predicted level of impact and risk (with adopted control measures implemented);
- The balance and weight of evidence in relation to the possible environmental benefit and the costs of adopting alternate, additional and/or improved control measures;
- Relative (and overall) cost associated with alternate, additional and/or improved control measures when compared with adopted control measures; and
- The potential environmental benefit of industry collaboration (were appropriate) in relation to research, resource, shared equity etc

The implementation of a hazard management hierarchy encourages the implementation of hard / engineering control measures and provides for an effective spread of controls measures as outlined in the PTTEP AA SSHE Risk Assessment Standard (SSHE-106-STD-400) as follows:

- Elimination and minimization of hazard by using options with a lower impact on receptors;
- Substitution by using products and/or processes with a lower impact on receptors;
- Engineering controls – prevention and mitigation; and
- Administrative/procedural controls.

All identified control measures are categorised according to their type, further allowing for an effective spread of measures in the event of a failure of a single critical element. A statement of expected performance is provided for each control measure to ensure suitability and effectiveness is consider. The types of controls are:

- Systems;
- Procedures;
- Person(s); and
- Equipment

For each component of the activity, a statement is provided regarding the overall certainty & effectiveness of the sum-total of the adopted control measures in reducing potential impacts and risks to ALARP.

1.3.4 Precautionary Approach

If the decision context is categorised as 'Type C', PTTEP will apply a precautionary approach to hazard management, should available engineering and scientific evidence be insufficient, inconclusive or uncertain, or if relevant Stakeholders have significant concerns relating to the aspect of the activity. The precautionary approach will mean that uncertainty is counterbalance with the use of conservative assumptions when undertaking environmental risk assessment and that additional control measures will being more likely adopted.

That is, environmental & social considerations are expected to take precedence over economic considerations, when evaluating the suitability of additional controls. In this context, PTTEP would be exposed to higher levels of financial cost associated with managing potential environmental impacts and risks to ALARP.

1.3.5 ALARP Justification

The overall ALARP assessment for each aspect of the proposed activity is based upon the range of considerations as described above, with consideration given to the Decision Context and Assessment Techniques adopted for this proposed activity in alignment with NOPSEMA's ALARP Guidance Note (N-04300-GN0166, June 2015), and OGUK Guidance on Risk Related Decision Making (Issue 2, July 2014).

1.3.6 Determination of Acceptability

In alignment with the NOPSEMA Environment Plan Decision Making Guideline (GL1721 Rev 3 May 2017),the Offshore Petroleum Greenhouse Gas Storage (Environment) Regulations 2009 (Sub-regulation 10A(c) and Part 1, Section 3 – Objects of the Regulations), and Part 3 of the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act), PTTEP have established a set of acceptability criteria when evaluating the acceptability of aspects of the activity:

1. The aspect of the activity is deemed to have a low (1-3) or medium (4) risk ranking and the environmental consequence/severity does not exceed and ranking of 4. If ranked medium risk additional control measures have been applied to manage potential environmental impacts and risks to ALARP;

2. The aspect of the activity does not compromise relevant principles of Ecologically Sustainable Development (ESD) or breach relevant requirements for environmental approvals (EPBC Act Part 3, Division 1), namely:
    - does not pose a threat of serious or irreversible environmental damage to matters of national environmental significance:
        a. the world heritage values of a declared World Heritage property;
        b. the national heritage values of a National Heritage place;
        c. the ecological character of a declared Ramsar wetland;
        d. any values and sensitivities that exist in, or in relation to, part or all of:
        e. a Commonwealth marine area; or
        f. Commonwealth land.
    - does not pose a [significant] threat to biodiversity and ecological integrity of:
        a. a listed threatened species or listed threatened ecological community; or
        b. a listed migratory species;
    - does not pose a threat to the quality of the environment available to future generations
3. The management of the activity is consistent with any relevant plan of management for a Commonwealth Marine Reserve (CMR) and/or a recovery plan for a threatened species that include specific management and conservation requirements.
4. All relevant legislative and other requirements have been met or considered in context, as discussed above;
5. All relevant internal PTTEP requirements have been met;
6. All valid objections or claims made by relevant (potentially affected) Stakeholders have been sufficiently addressed; and
7. The predicted level of impact is equal to or below the defined acceptable impact (DAI) threshold (as described below).

The principles of ESD considered to not be relevant for the purposes of the acceptability criteria are:

- Decision making processes should effectively integrate both long term and short term economic, environmental, social and equitable considerations;
- Improved valuation, pricing and incentive mechanisms should be promoted.

1.3.7 Defined Acceptable Impact

In alignment with NOPSEMA's Environment Plan Decision Making Guideline (GL1721 Rev 3 May 2017), and to allow for the demonstration that an impact is below a given tolerance threshold, a defined acceptable impact (DAI) is established taking into consideration:

- The relative risks posed to particular values and sensitivities;
- The input (if any) of relevant stakeholders;
- The demonstration of ALARP based upon the decision context (as described above); and
- The principles of ESD

As per the ALARP decision context (described above) PTTEP AA have adopted an aligned approach to the definition of an acceptable impact. As such, impacts and risks that have been classified as a 'Type A' are inherently at or below an acceptable level, provided it is demonstrated that the impacts and risks are reduced to ALARP. This is based on a 'Type A' decision context representing a low risk of potential impact from activities that are well practised, with risk relatively well understood and no significant stakeholder interest.

Activities with potentially elevated impacts and risks are classified as a 'Type B' (medium risk) or 'Type C' (high risk) decision context. For these activities, PTTEP AA provides a comparison between the predicted levels of impact and the defined acceptable impact threshold.

For routine activities, the predicted level of impact is equal to or below the DAI when:

1. Acceptability criteria 1-5 have been met, and
2. Control measures have been demonstrated to be ALARP, and
3. Impacts and risks are 'Type A'; or
4. Impacts and risk are 'Type B' or 'Type C'; and
5. A qualitative or quantitative comparison demonstrates the predicted level of impact is equal to or below the DAI and any scientific or engineering uncertainty is address with a degree of conservatism, and control measures can be expected to achieve the defined Environmental Performance Outcome.

For non-routine discharges (including emergency conditions), the DAI threshold is taken to be the conservative environmental impact threshold(s) and the outer geographical limits of the EMBA relevant to the discharge type. For emergency conditions, the predicted level of impact is equal to or below the DAI when:

1. Acceptability criteria 1-5 have been met, and
2. Control measures have been demonstrated to be ALARP; and
3. Preventative control measures can be expected to achieve an Environmental Performance Outcome (EPO) of no impact;

For non-routine activities, including those implemented to respond to an emergency condition, the predicted level of impact is equal to or below the DAI when:

1. Acceptability criteria 1-5 have been met; and
2. Control measures have been demonstrated to be ALARP; and
3. Response control measures can be expected to achieve the stated EPO for the response strategy; or
4. The emergency response control measures do not afford the impact to exceed the conservative environmental impact threshold(s) or extend beyond the outer geographical limits of the EMBA (the emergency condition DAI threshold).

The DAI is also considered as a benchmark when establishing the Environmental Performance Outcome and the expected level of performance of proposed control measures.

To provide additional assurance of the acceptable level of impact associated with the implementation of 'Type B' or 'Type C' oil pollution emergency strategies, PTTEP AA commit to engaging with relevant stakeholders to establish external context during the Net Environmental Benefit Assessment (NEBA) process (*Section 5.12* of the OPEP), as further described in *Section 8.4* of the OPEP. Pending the outcome of this engagement, the upper limit of acceptable impact on a stakeholder's interest or functions can be evaluated holistically considering the overall cost-benefit of response strategy implementation.

1.3.8 Determination of Unacceptable Impact or Risk

PTTEP considers an unacceptable environmental impact or risk exists when:

- despite the application of a 'Precautionary Approach' to hazard management, and the application of all reasonably practicable control measures, there remains a 'Credible' chance of a 'Major' environmental effect occurring or a "Likely' chance of a 'Serious' environmental effect occurring; or
- Any of the above 'Acceptability Criteria' have not been met.

To establish internal context, as per *Section 4.4* of the PTTEP SSHE Risk Management Procedure (Standard ID: S32-501965-CORP), higher order risks are governed by a Technical Authority Standard, which identifies a register of local subject matter Technical Authorities (TA1s) and corporate subject matter Technical Authorities (TA2s) authorised to review and verify risk assessments.

TA1s review and verify risk assessments performed by the Asset and Project teams where the risk is classified as Medium Risk with a severity of Serious (4) or Major (5); and TA2's are responsible for reviewing and verifying Asset / Project risk assessments where the assessment is in the Red Zone of the Risk Assessment Matrix after mitigation. PTTEP Chief Executive Officer (CEO) approval and sign off is required for high residual risk activities to proceed. The Technical Authorities for environmental risk for these proposed activities are:

- TA1 – PTTEP Senior Environmental Advisor; and
- TA2 – PTTEP Vice President for Environment Management Department

For this proposed activity, the PTTEP CEO shall use the acceptance criteria for determining acceptability of impact and risk as defined within this EP.

Table A.1 Risk Matrix

Risk Matrix

Consequences					Frequency of Occurrence (chance of event occurring per year)				
					Rare (A)	Unlikely (B)	Credible (C)	Likely (D)	Frequent (E)
Severity	**People (*)**	**Asset Production / Property (*)**	**Environmental Effect (*)**	**Reputation**	Event occurrence is remote OR never heard of in the E&P industry	Event occurrence is possible but unlikely OR has happened few times in the E&P industry	Event has occurred several times in E&P industry OR occurred in PTTEP	Event has occurred several times per year in E&P industry OR more than once per year in PTTEP OR occurred at the location.	Events are frequent in the E&P industry OR occurred more than once per year at the location
Major (5)	Multiple fatalities	Loss > $50M AUD	Spill > 100,000 bbl OR Tier 3 OR International assistance	International TV International papers					
Serious (4)	Multiple LWDC OR one or more Permanent Disability OR 1 fatality	Loss between $10M – $50M AUD	Spill > 10,000 bbl OR Tier 2 OR Regional assistance	National TV National papers				**HIGH RISK**	
Significant (3)	Single LWDC OR multiple RWDC	Loss between $1M – $10M AUD	Spill > 80 Litres OR Tier 1 OR Localised effect	Local TV Local written media			**MEDIUM RISK**		
Moderate (2)	MTC OR Single RWDC	Loss between $50K – $1M AUD	Spill < 80 Litres OR Moderate effect	Local media interest		**LOW RISK**			
Minor (1)	Minor Injury with First Aid	Loss < $50K AUD Insignificant	Spill in containment OR Minor effect	No reaction					

MAE

HPI

*, Refer to qualitative explanation overleaf

Low Risk	Medium Risk	High Risk
Broadly acceptable	Risk reduction measures required to achieve ALARP Residual risk with Severity of (4) and (5) require TA1 sign-off to conduct task	Risk reduction measures required to achieve ALARP Residual High Risk requires TA1 verification, TA2 and PTTEP AA CEO sign-off to conduct task

Table A.2 Qualitative Measures of Consequence: Effect on the Environment

Number	Description
1	**Minor Effect** – Localised change to environmental (nuisance or sub-lethal) – practically indistinguishable from existing baseline, within immediate vicinity of the installation. Impact to individual or small number of non-listed species. No or negligible financial consequences (<$50K AUD). Little to no potential impacts to relevant external stakeholders.
2	**Moderate Effect** – Localised to wide-spread change to the environment (nuisance, chronic or sub-lethal) –. Negligible and reversible change to baseline of population / community (no lasting effect). Impact to individual listed species or large number of non-listed species. Negligible to small financial consequence ($50K - $1M AUD). Single breach of statutory or prescribed limit, or cause for single complaint/objection from relevant external stakeholder.
3	**Significant Effect** – Wide-spread change to the environment (chronic, acute or lethal) – noticeable but reversible change to baseline – population / community. (short-term effect). Impact to individual or multiple listed species or population of non-listed species. Moderate financial consequence ($1M - $10M AUD). Potential for multiple breaches of statutory of prescribed limits, or cause for multiple complaints/objections from relevant external stakeholders.
4	**Serious Effect** – Wide-spread to regional change to the environment (chronic, acute or lethal) – persistent but reversible change to baseline – population, community or species. Impact to multiple or population of listed species and/or non-listed species. High financial consequence ($10M - $50M AUD). Potential remediation required. Likely multiple breaches of statutory of prescribed limits, or cause for multiple complaints/objections from relevant external stakeholders and other interested parties.
5	**Major Effect** – Wide-spread or regional change to the environment (chronic, acute and/or lethal) – irreversible change to baseline – populations, communities, species. Impact at population and/or species level of listed and/or non-listed species. Potential threat to ecological integrity of listed species. Potential serious or irreversible damage to World Heritage, National Heritage, Ramsar wetland, Values within a Commonwealth Marine Reserves or on Commonwealth Land. Very high financial consequence (>$50M AUD). Potential for significant level of remediation required. Likely multiple breaches of statutory of prescribed limits, or cause for multiple complaints/objections from relevant external stakeholders and other interested parties. Potential for legal proceedings.

Table A.3 Supporting Contextual Definitions for Qualitative Measures of Consequence

Context	Term	Definition
Extent	Localised	The area directly affected by the petroleum activity and the immediate vicinity of the activity i.e., the MDP area
	Wide-spread	The area well outside the immediate vicinity of the activity i.e., outside the MDP area
	Regional	Immediate Region / Bio-Regional
Severity	Nuisance	Change to function of an individual or population
	Disruption	Change to function of a species or ecosystem
	Chronic	Persisting for a long time or constantly recurring
	Acute	Severe but of short duration
	Sub-Lethal	Having an effect less than lethal
	Lethal	Sufficient to cause death
Duration	Short-term	< 2 years
	Medium-term	2-5 years
	Long-term	5-10 years
	Persistent	> 10 years
	Irreversible	Detectable & permanent changed to baseline
EPBC Act 1999	Serious	For this proposed activity 'serious' is considered interchangeable with the term 'major effect' as defined in Table D-2 above.
	Ecosystem	ecosystem means a dynamic complex of plant, animal and micro organism communities and their non living environment interacting as a functional unit.
	ESD	3A Principles of ecologically sustainable development The following principles are principles of ecologically sustainable development: (a) decision making processes should effectively integrate both long term and short term economic, environmental, social and equitable considerations; (b) if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation; (c) the principle of inter generational equity—that the present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations; (d) the conservation of biological diversity and ecological integrity should be a fundamental consideration in decision making; (e) improved valuation, pricing and incentive mechanisms should be promoted.

Context	Term	Definition
	Biodiversity	Biodiversity means the variability among living organisms from all sources (including terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part) and includes: (a) diversity within species and between species; and (b) diversity of ecosystems.
	Ecological Character	ecological character has the meaning given by subsection 16(3).
	Ecological Community	Ecological community means the extent in nature in the Australian jurisdiction of an assemblage of native species that: (a) inhabits a particular area in nature; and (b) meets the additional criteria specified in the regulations (if any) made for the purposes of this definition.
	Ecologically Sustainable Use	Ecologically sustainable use of natural resources means use of the natural resources within their capacity to sustain natural processes while maintaining the life support systems of nature and ensuring that the benefit of the use to the present generation does not diminish the potential to meet the needs and aspirations of future generations.
	Precautionary Principle	The precautionary principle is that lack of full scientific certainty should not be used as a reason for postponing a measure to prevent degradation of the environment where there are threats of serious or irreversible environmental damage.
Other	Significant	Important, notable or of consequence having regard to its context or intensity.
	Damage	Physical harm that impairs the value, usefulness, or normal function of something.

APPENDIX B – STAKEHOLDER CONSULTATION REGISTER

Relevant Stakeholder	Rationale for Engagement	Record of consultation	Required follow-up / actions
Commonwealth Government			
Australian Fisheries Management Authority	Australian Government agency responsible for the management and regulation of Commonwealth fish resources.	**14 November 2011:** Letter sent by PTTEP AA regarding Montara field development program. **16 January 2013:** Letter and fact sheet sent by PTTEP AA via post and email regarding Montara Operations Environment Plan and scheduled start-up of production. **24 January 2013:** AFMA advised via phone that an e-response would be provided within 15 days. PTTEP AA sent follow up email and confirmed which AFMA managed fisheries PTTEP AA is consulting regarding Montara EP. **30 January 2013**: AFMA confirmed receipt of information, advised the consultation being conducted by PTTEP AA, using AFMA provided register, was appropriate and stated it had no further comment at this stage. **30/31 August 2017:** An email was distributed to stakeholders informing them of PTTEP AA's current and upcoming activities on 30 August 2017. Information was provided to stakeholders on the revision to the 2013 Montara Operations EP, the upcoming 5 year review of the Montara Operations EP, the Montara Drilling EP has been accepted by NOPSEMA and notifying stakeholders of the upcoming Cash Maple Offshore Project Proposal was provided to stakeholders. An additional email was sent to stakeholders on 31 August 2017 which superseded the original email dated on 30 August 2017. The initial email contained inaccurate information regarding the Improvement Notice issued by NOPSEMA. The latest email distributed informed stakeholders of the error and provided them with the correct information. **15 November 2017:** An email was sent to stakeholders with an attached factsheet that provided information about the revisions made to the Montara Operations EP, including information on the improvement notice issued by NOPSEMA. The email provided a link to the Montara Production Drilling EP Summary on NOPSEMA's website and informed stakeholders that the drilling campaign was successfully completed over September and October 2017, without incident. The factsheet provided an overview of the revisions that have been made to the EP, which pertained to oil spill modelling, flaring, produced water formation and the Oil Pollution Emergency Plan (OPEP). **17 November 2017:** Email response from AFMA informing PTTEP AA to direct all correspondence to petroleum@afma.gov.au. The factsheet was forwarded to the correct email address – no further correspondence has occurred to date.	Consultation registry has been updated. No further action required.
Australian Hydrographic Service	Australian Government agency responsible for the production and maintenance of navigational charts and associated products in Australia. Australia Hydrographic Service is responsible for issuing a	**14 November 2011**: Letter sent by PTTEP AA regarding Montara field development program. **2 December 2011:** Letter sent by PTTEP AA regarding Montara field development program. **16 December 2011:** AHS issued a Notice to Mariners – Drill Rig Ensco 109 is conducting drilling operations. A 500m exclusion zone exists around the drill rig. FPSO Montara Venture will be established mid-2012. MV Sapura-3000 and MV Rockwater-2 are conducting pipelay operations. **24 August 2012:** AHS issued a Notice to Mariners – Updated on previous issue. Drill Rig Ensco 109 is conducting drilling operations. A 500m exclusion zone exists around the drill rig. FPSO Montara Venture will be established mid-2012. Pipelines are in position. **21 September 2012:** AHS issued a Notice to Mariners – FPSO Montara Venture is in position.	No further action required.

Relevant Stakeholder	Rationale for Engagement	Record of consultation	Required follow-up / actions
	Notice to Mariners.	**16 January 2013:** Letter and fact sheet sent by PTTEP AA via post and email regarding Montara Operations EP and scheduled start-up of production. **24 January 2013**: Telephone consultation between PTTEP AA and AHS, who confirmed receipt of information and advised they will provide confirmation in writing. **4 December 2013**: AHS issued a Notice to Mariners – Drill rig Ensco 109 is conducting drilling operations in position. **12 February 2016:** AHS issued a Notice to Mariners – Introducing a cautionary area around the MDP (see Consultation log in the Appendices). **30/31 August 2017:** An email was distributed to stakeholders informing them of PTTEP AA's current and upcoming activities on 30 August 2017. Information was provided to stakeholders on the revision to the 2013 Montara Operations EP, the upcoming 5 year review of the Montara Operations EP, the Montara Drilling EP has been accepted by NOPSEMA and notifying stakeholders of the upcoming Cash Maple Offshore Project Proposal was provided to stakeholders. An additional email was sent to stakeholders on 31 August 2017 which superseded the original email dated on 30 August 2017. The initial email contained inaccurate information regarding the Improvement Notice issued by NOPSEMA. The latest email distributed informed stakeholders of the error and provided them with the correct information. **31 August 2017:** AHS acknowledged receipt of email received by PTTEP AA. **15 November 2017:** An email was sent to stakeholders with an attached factsheet that provided information about the revisions made to the Montara Operations EP, including information on the improvement notice issued by NOPSEMA. The email provided a link to the Montara Production Drilling EP Summary on NOPSEMA's website and informed stakeholders that the drilling campaign was successfully completed over September and October 2017, without incident. The factsheet provided an overview of the revisions that have been made to the EP, which pertained to oil spill modelling, flaring, produced water formation and the Oil Pollution Emergency Plan (OPEP). **16 November 2017:** Email response from AHS acknowledging receipt of information.	
Australian Marine Oil Spill Centre	Australian Marine Oil Spill Centre regulates Australia's major oil spill response. AMOSC is on 24 hr stand-by for rapid response anywhere around the Australian coast.	**10 January 2013:** AMOSC provided their current inventories and capabilities of oil spill response resources available. **16 January 2013:** Letter and fact sheet sent by PTTEP AA via post and email regarding Montara Operations EP and scheduled start-up of production. **5 February 2013:** PTTEP AA provided AMOSC with relevant sections of the draft OSCP for review. **4-7 June 2013:** PTTEP AA representative visited the AMOSC office to refine the response strategies for the OSCP and confirm AMOSC support regarding resources. **13 June 2013:** AMOSC confirmed receipt of information, reviewed the OSCP and provided PTTEP AA with some observations in relation to oil spill management. **30/31 August 2017:** An email was distributed to stakeholders informing them of PTTEP AA's current and upcoming activities on 30 August 2017. Information was provided to stakeholders on the revision to the 2013 Montara Operations EP, the upcoming 5 year review of the Montara	No further action required.

Relevant Stakeholder	Rationale for Engagement	Record of consultation	Required follow-up / actions
		Operations EP, the Montara Drilling EP has been accepted by NOPSEMA and notifying stakeholders of the upcoming Cash Maple Offshore Project Proposal was provided to stakeholders. An additional email was sent to stakeholders on 31 August 2017 which superseded the original email dated on 30 August 2017. The initial email contained inaccurate information regarding the Improvement Notice issued by NOPSEMA. The latest email distributed informed stakeholders of the error and provided them with the correct information. **15 November 2017:** An email was sent to stakeholders with an attached factsheet that provided information about the revisions made to the Montara Operations EP, including information on the improvement notice issued by NOPSEMA. The email provided a link to the Montara Production Drilling EP Summary on NOPSEMA's website and informed stakeholders that the drilling campaign was successfully completed over September and October 2017, without incident. The factsheet provided an overview of the revisions that have been made to the EP, which pertained to oil spill modelling, flaring, produced water formation and the Oil Pollution Emergency Plan (OPEP).	
Australian Maritime Safety Authority	Australian Maritime Safety Authority is the statutory authority responsible for maritime safety, protection of the marine environment, prevention of ship-sourced pollution and providing national search and rescue.	**14 November 2011:** Letter sent by PTTEP AA regarding Montara field development program. **16 January 2013:** Letter and fact sheet sent by PTTEP AA via post and email regarding Montara Operations EP and scheduled start-up of production. **5 February 2013:** AMSA requesting additional information from PTTEP AA and for PTTEP AA to define AMSA's roles and responsibilities. **8 February 2013**: PTTEP AA providing AMSA with the Draft Montara Operations OSCP to help clarify matters raised by AMSA. PTTEP requests feedback on the response of AMSA outlined in the plan. **13 March 2013:** PTTEP AA and AMSA had a meeting to discuss potential spills that could occur at Montara, and what resources AMSA would provide. AMSA requested to review the Montara OSCPs. **15 April 2013:** AMSA confirming receipt of information and AMSA's agreement to the roles defined within the OSCP. AMSA requests confirmation/acceptance of AMSA's agreement to the roles. **4 June 2013:** PTTEP AA acknowledges AMSA's agreement to the roles AMSA has agreed to within the Oil Spill Contingency Plan. **30/31 August 2017:** An email was distributed to stakeholders informing them of PTTEP AA's current and upcoming activities on 30 August 2017. Information was provided to stakeholders on the revision to the 2013 Montara Operations EP, the upcoming 5 year review of the Montara Operations EP, the Montara Drilling EP has been accepted by NOPSEMA and notifying stakeholders of the upcoming Cash Maple Offshore Project Proposal was provided to stakeholders. An additional email was sent to stakeholders on 31 August 2017 which superseded the original email dated on 30 August 2017. The initial email contained inaccurate information regarding the Improvement Notice issued by NOPSEMA. The latest email distributed informed stakeholders of the error and provided them with the correct information. **15 November 2017:** An email was sent to stakeholders with an attached factsheet that provided	No further action required.

Relevant Stakeholder	Rationale for Engagement	Record of consultation	Required follow-up / actions
		information about the revisions made to the Montara Operations EP, including information on the improvement notice issued by NOPSEMA. The email provided a link to the Montara Production Drilling EP Summary on NOPSEMA's website and informed stakeholders that the drilling campaign was successfully completed over September and October 2017, without incident. The factsheet provided an overview of the revisions that have been made to the EP, which pertained to oil spill modelling, flaring, produced water formation and the Oil Pollution Emergency Plan (OPEP).	
Department of Agriculture and Water Resources, Australian Quarantine Inspection Service (formerly Department of Agriculture, Fisheries and Forestry)	The Department of Agriculture and Water Resources is the regulatory body responsible for the protection of Australia's animals, plants and human health status.	**16 January 2013:** Letter and fact sheet sent by PTTEP AA via post and email regarding Montara Operations EP and scheduled start-up of production. **25 January 2013:** Quarantine Division at DAWR sent PTTEP AA email stating it has no issues related to Montara Operations EP at this stage. **31 January 2013:** PTTEP AA sent follow up email regarding response to Montara Operations EP. **5 February 2013:** DAFF advised via phone that AFMA would provide formal response on its behalf and requested to be kept informed of developments. **30/31 August 2017:** An email was distributed to stakeholders informing them of PTTEP AA's current and upcoming activities on 30 August 2017. Information was provided to stakeholders on the revision to the 2013 Montara Operations EP, the upcoming 5 year review of the Montara Operations EP, the Montara Drilling EP has been accepted by NOPSEMA and notifying stakeholders of the upcoming Cash Maple Offshore Project Proposal was provided to stakeholders. An additional email was sent to stakeholders on 31 August 2017 which superseded the original email dated on 30 August 2017. The initial email contained inaccurate information regarding the Improvement Notice issued by NOPSEMA. The latest email distributed informed stakeholders of the error and provided them with the correct information. **15 November 2017:** An email was sent to stakeholders with an attached factsheet that provided information about the revisions made to the Montara Operations EP, including information on the improvement notice issued by NOPSEMA. The email provided a link to the Montara Production Drilling EP Summary on NOPSEMA's website and informed stakeholders that the drilling campaign was successfully completed over September and October 2017, without incident. The factsheet provided an overview of the revisions that have been made to the EP, which pertained to oil spill modelling, flaring, produced water formation and the Oil Pollution Emergency Plan (OPEP).	DAWR would like to be kept informed of PTTEP AA activities.
Department of Immigration and Border Protection, Australian Border Force	Department of Immigration and Border Protection is the regulatory body responsible for facilitating lawful passage of people and goods. The	**16 January 2013:** Letter and fact sheet sent by PTTEP AA via post and email regarding Montara Operations EP and scheduled start-up of production. **5 February 2013**: Border Protection advised PTTEP AA via phone that Border Protection at this time has no comments or queries. **30/31 August 2017:** An email was distributed to stakeholders informing them of PTTEP AA's current and upcoming activities on 30 August 2017. Information was provided to stakeholders on	No further action required.

Relevant Stakeholder	Rationale for Engagement	Record of consultation	Required follow-up / actions
	Department is responsible for reviewing the potential impact of vessel movements to and around the permit area on its day to day activities.	the revision to the 2013 Montara Operations EP, the upcoming 5 year review of the Montara Operations EP, the Montara Drilling EP has been accepted by NOPSEMA and notifying stakeholders of the upcoming Cash Maple Offshore Project Proposal was provided to stakeholders. An additional email was sent to stakeholders on 31 August 2017 which superseded the original email dated on 30 August 2017. The initial email contained inaccurate information regarding the Improvement Notice issued by NOPSEMA. The latest email distributed informed stakeholders of the error and provided them with the correct information. **15 November 2017:** An email was sent to stakeholders with an attached factsheet that provided information about the revisions made to the Montara Operations EP, including information on the improvement notice issued by NOPSEMA. The email provided a link to the Montara Production Drilling EP Summary on NOPSEMA's website and informed stakeholders that the drilling campaign was successfully completed over September and October 2017, without incident. The factsheet provided an overview of the revisions that have been made to the EP, which pertained to oil spill modelling, flaring, produced water formation and the Oil Pollution Emergency Plan (OPEP).	
Department of Defence	The Department of Defence has operations in the vicinity of the Operational Area.	**16 January 2013:** Letter and fact sheet sent by PTTEP AA via post and email regarding Montara Operations EP and scheduled start-up of production. **30/31 August 2017:** An email was distributed to stakeholders informing them of PTTEP AA's current and upcoming activities on 30 August 2017. Information was provided to stakeholders on the revision to the 2013 Montara Operations EP, the upcoming 5 year review of the Montara Operations EP, the Montara Drilling EP has been accepted by NOPSEMA and notifying stakeholders of the upcoming Cash Maple Offshore Project Proposal was provided to stakeholders. An additional email was sent to stakeholders on 31 August 2017 which superseded the original email dated on 30 August 2017. The initial email contained inaccurate information regarding the Improvement Notice issued by NOPSEMA. The latest email distributed informed stakeholders of the error and provided them with the correct information. **15 November 2017:** An email was sent to stakeholders with an attached factsheet that provided information about the revisions made to the Montara Operations EP, including information on the improvement notice issued by NOPSEMA. The email provided a link to the Montara Production Drilling EP Summary on NOPSEMA's website and informed stakeholders that the drilling campaign was successfully completed over September and October 2017, without incident. The factsheet provided an overview of the revisions that have been made to the EP, which pertained to oil spill modelling, flaring, produced water formation and the Oil Pollution Emergency Plan (OPEP).	No further action required.
Department of Foreign Affairs & Trade	Department of Foreign Affairs and Trade are responsible for all international affairs. PTTEP AA regularly keeps DFAT informed of its activities in	**15 March 2013:** Letter and fact sheet sent by PTTEP AA via post and email regarding Montara Operations EP and scheduled start-up of production. **22 March 2013:** Email sent to DFAT in response to previous email, thanking for the response. **16 May 2013**: PTTEP AA requesting to be advised in writing, that the information given to DFAT has been received and that DFAT will either be responding with comments and/or queries or DFAT is satisfied with the information provided. Correspondence was followed up by several	No further action required.

Relevant Stakeholder	Rationale for Engagement	Record of consultation	Required follow-up / actions
	relation to Montara due to its proximity to Indonesia waters.	telephone communications. **24 May 2013:** DFAT advised by email, that they would continue to review the provided information and would revert back to PTTEP if they have any queries. **30/31 August 2017:** An email was distributed to stakeholders informing them of PTTEP AA's current and upcoming activities on 30 August 2017. Information was provided to stakeholders on the revision to the 2013 Montara Operations EP, the upcoming 5 year review of the Montara Operations EP, the Montara Drilling EP has been accepted by NOPSEMA and notifying stakeholders of the upcoming Cash Maple Offshore Project Proposal was provided to stakeholders. An additional email was sent to stakeholders on 31 August 2017 which superseded the original email dated on 30 August 2017. The initial email contained inaccurate information regarding the Improvement Notice issued by NOPSEMA. The latest email distributed informed stakeholders of the error and provided them with the correct information. **15 November 2017:** An email was sent to stakeholders with an attached factsheet that provided information about the revisions made to the Montara Operations EP, including information on the improvement notice issued by NOPSEMA. The email provided a link to the Montara Production Drilling EP Summary on NOPSEMA's website and informed stakeholders that the drilling campaign was successfully completed over September and October 2017, without incident. The factsheet provided an overview of the revisions that have been made to the EP, which pertained to oil spill modelling, flaring, produced water formation and the Oil Pollution Emergency Plan (OPEP).	
Department of Environment and Energy (formerly Department of Sustainability, Environment, Water, Population and Communities)	Department of Environment and Energy is the regulatory body responsible for the protection and conservation of Australia's environment.	**16 January 2013**: Letter and fact sheet sent by PTTEP AA via post and email regarding Montara Operations EP and scheduled start-up of production. **17 January 2013**: SEWPAC requesting clarification on the delayed start date and wondering if the fact sheet and letter will be placed on PTTEP website as a media release. **17 January 2013:** PTTEP confirming that production has been delayed and the current projection is early March. In relation to the fact sheet, yes it will be provided on the website but not intended as a media release. **29 August 2017:** An email was sent informing DoEE that PTTEP AA have been updating the Montara Operations EP, for resubmission to NOSPEMA in response to an Environmental Improvement Notice and that this work has included a thorough review of produced formation water management and we would like to provide you with an update in relation to Condition 3 of EPBC 2002/755. **30/31 August 2017:** An email was distributed to stakeholders informing them of PTTEP AA's current and upcoming activities on 30 August 2017. Information was provided to stakeholders on the revision to the 2013 Montara Operations EP, the upcoming 5 year review of the Montara Operations EP, the Montara Drilling EP has been accepted by NOPSEMA and notifying stakeholders of the upcoming Cash Maple Offshore Project Proposal was provided to stakeholders. An additional email was sent to stakeholders on 31 August 2017 which superseded the original email dated on 30 August 2017. The initial email contained inaccurate information regarding the Improvement Notice issued by NOPSEMA. The latest email distributed informed	No further action required.

Relevant Stakeholder	Rationale for Engagement	Record of consultation	Required follow-up / actions
		stakeholders of the error and provided them with the correct information. **30 August 2017:** The DEE acknowledged receipt of information and thanked PTTEPA A for keeping the DEE up to date on upcoming and current activities. **31 August 2017:** Phone call record Items discussed: 1. PTTEP requested advice on the schedule for approval the updated Montara Production Drilling OPEP. 2. Further to email provided on 29/8/17, PTTEP advised that condition 3 of EPBC 2002/755 is predicted to be triggered by the end of the year. Specifically, that the monthly average for PFW discharge volumes will exceed 30,000 barrels/day and the requirement to submit a management plan would be triggered. Vaughn advised that an email should be sent to him, confirming this information. 3. PTTEP advised DoEE that a 5 yearly update of the Montara Operations EP would be submitted to NOPSEMA in Q1 2018. This will be the first time that the plan in its entirety will be assessed under the OPGGS(E)Regulations since they were updated to include requirements from the EPBC Act and PTTEP advised it's desire to investigate streamlining of the conditions in EPBC 2002/755. Vaughn advised to also provide an email to this effect to initiate the process. **15 November 2017:** An email was sent to stakeholders with an attached factsheet that provided information about the revisions made to the Montara Operations EP, including information on the improvement notice issued by NOPSEMA. The email provided a link to the Montara Production Drilling EP Summary on NOPSEMA's website and informed stakeholders that the drilling campaign was successfully completed over September and October 2017, without incident. The factsheet provided an overview of the revisions that have been made to the EP, which pertained to oil spill modelling, flaring, produced water formation and the Oil Pollution Emergency Plan (OPEP).	
Department of Industry, Innovation and Science (formerly Department of Resources, Energy and Tourism)	Department of Industry, Innovation and Science is the regulatory body responsible for supporting science, streamlining regulations and improving business capability.	Prior to this round of consultation, DRET and PTTEP AA have been involved in extensive consultation since the commencement of the Montara Development Plan in early 2008. **16 January 2013:** Letter and fact sheet sent by PTTEP AA via post and email regarding Montara Operations EP and scheduled start-up of production. **25 January 2013**: DRET advised PTTEP AA that they had no comments or queries and would provide it in writing. **25 January 2013:** Email informing PTTEP no comments or objections are made on the EP, but would like to be included on the distribution list for updates concerning the Montara Development project. **30/31 August 2017:** An email was distributed to stakeholders informing them of PTTEP AA's current and upcoming activities on 30 August 2017. Information was provided to stakeholders on the revision to the 2013 Montara Operations EP, the upcoming 5 year review of the Montara Operations EP, the Montara Drilling EP has been accepted by NOPSEMA and notifying	The Department would like to be included on the distribution list for updates concerning the Montara Development project.

Relevant Stakeholder	Rationale for Engagement	Record of consultation	Required follow-up / actions
		stakeholders of the upcoming Cash Maple Offshore Project Proposal was provided to stakeholders. An additional email was sent to stakeholders on 31 August 2017 which superseded the original email dated on 30 August 2017. The initial email contained inaccurate information regarding the Improvement Notice issued by NOPSEMA. The latest email distributed informed stakeholders of the error and provided them with the correct information. **15 November 2017:** An email was sent to stakeholders with an attached factsheet that provided information about the revisions made to the Montara Operations EP, including information on the improvement notice issued by NOPSEMA. The email provided a link to the Montara Production Drilling EP Summary on NOPSEMA's website and informed stakeholders that the drilling campaign was successfully completed over September and October 2017, without incident. The factsheet provided an overview of the revisions that have been made to the EP, which pertained to oil spill modelling, flaring, produced water formation and the Oil Pollution Emergency Plan (OPEP). **16 November 2017:** Email response from the Department acknowledging receipt of information and informing PTTEP AA that the Department appreciates being kept informed about PTTEP AA activities.	
National Native Title Tribunal	Responsible for the management of all Native Title issues/claims and upkeep of the National Native Title registry.	**30/31 August 2017:** An email was distributed to stakeholders informing them of PTTEP AA's current and upcoming activities on 30 August 2017. Information was provided to stakeholders on the revision to the 2013 Montara Operations EP, the upcoming 5 year review of the Montara Operations EP, the Montara Drilling EP has been accepted by NOPSEMA and notifying stakeholders of the upcoming Cash Maple Offshore Project Proposal was provided to stakeholders. An additional email was sent to stakeholders on 31 August 2017 which superseded the original email dated on 30 August 2017. The initial email contained inaccurate information regarding the Improvement Notice issued by NOPSEMA. The latest email distributed informed stakeholders of the error and provided them with the correct information. **1 September 2017:** NNTT replied to the superseded email acknowledging the information received and requesting additional information on the title blocks of future activities to conduct a search of native title registry. **6 September 2017:** An email was sent to the NNTT providing the petroleum title blocks for the Montara Operations and the Cash Maple gas field. A map of the Montara Operations was attached for the departments own records. The NNTT was informed a stakeholder factsheet will soon be distributed to stakeholders with additional information on the Cash Maple Offshore Project Proposal. **15 November 2017:** An email was sent to stakeholders with an attached factsheet that provided information about the revisions made to the Montara Operations EP, including information on the improvement notice issued by NOPSEMA. The email provided a link to the Montara Production Drilling EP Summary on NOPSEMA's website and informed stakeholders that the drilling campaign was successfully completed over September and October 2017, without incident. The factsheet provided an overview of the revisions that have been made to the EP, which pertained to oil spill modelling, flaring, produced water formation and the Oil Pollution Emergency Plan	No further action is required.

Relevant Stakeholder	Rationale for Engagement	Record of consultation	Required follow-up / actions
		(OPEP). **15 November 2017:** An email in response to the Montara Operations EP revision correspondence was received from NNTT, acknowledging receipt of information and informing PTTEP that the tribunal does not require any additional information, nor wished to provide feedback at this time.	
Department of Communications and the Arts	The Department of Communications and the Arts is responsible for the communications industry - television, radio, internet, phone, post and digital technologies.	**30/31 August 2017:** An email was distributed to stakeholders informing them of PTTEP AA's current and upcoming activities on 30 August 2017. Information was provided to stakeholders on the revision to the 2013 Montara Operations EP, the upcoming 5 year review of the Montara Operations EP, the Montara Drilling EP has been accepted by NOPSEMA and notifying stakeholders of the upcoming Cash Maple Offshore Project Proposal was provided to stakeholders. An additional email was sent to stakeholders on 31 August 2017 which superseded the original email dated on 30 August 2017. The initial email contained inaccurate information regarding the improvement notice issued by NOPSEMA. The latest email distributed informed stakeholders of the error and provided them with the correct information. **15 November 2017:** An email was sent to stakeholders with an attached factsheet that provided information about the revisions made to the Montara Operations EP, including information on the improvement notice issued by NOPSEMA. The email provided a link to the Montara Production Drilling EP Summary on NOPSEMA's website and informed stakeholders that the drilling campaign was successfully completed over September and October 2017, without incident. The factsheet provided an overview of the revisions that have been made to the EP, which pertained to oil spill modelling, flaring, produced water formation and the Oil Pollution Emergency Plan (OPEP).	No further action required.
WA Government Departments			
Department of Water and Environmental Regulation (formerly Environmental Protection Authority)	The Department of Water and Environmental Regulation is the regulatory body responsible for water and environmental regulation.	**16 January 2013:** Letter and fact sheet sent by PTTEP AA via post and email regarding Montara Operations EP and scheduled start-up of production. **1 February 2013**: EPA informing PTTEP AA that the DoT is the Hazard Management Agency for marine oil pollution in Western Australia. EPA recommends PTTEP plan for post spill scientific monitoring and completes a quantitative environmental baseline prior to production commencing. OEPA also requires that adequate contingency measures are in place to protect States environmental assets. **7 February 2013:** PTTEP provided EPA with additional information in regards to Oil spill modelling. **9 February 2013**: PTTEP acknowledged EPAs recommendations and will consult with DoT on oil spill arrangements.	No further action required.

Relevant Stakeholder	Rationale for Engagement	Record of consultation	Required follow-up / actions
		30/31 August 2017: An email was distributed to stakeholders informing them of PTTEP AA's current and upcoming activities on 30 August 2017. Information was provided to stakeholders on the revision to the 2013 Montara Operations EP, the upcoming 5 year review of the Montara Operations EP, the Montara Drilling EP has been accepted by NOPSEMA and notifying stakeholders of the upcoming Cash Maple Offshore Project Proposal was provided to stakeholders. An additional email was sent to stakeholders on 31 August 2017 which superseded the original email dated on 30 August 2017. The initial email contained inaccurate information regarding the Improvement Notice issued by NOPSEMA. The latest email distributed informed stakeholders of the error and provided them with the correct information. **15 November 2017:** An email was sent to stakeholders with an attached factsheet that provided information about the revisions made to the Montara Operations EP, including information on the improvement notice issued by NOPSEMA. The email provided a link to the Montara Production Drilling EP Summary on NOPSEMA's website and informed stakeholders that the drilling campaign was successfully completed over September and October 2017, without incident. The factsheet provided an overview of the revisions that have been made to the EP, which pertained to oil spill modelling, flaring, produced water formation and the Oil Pollution Emergency Plan (OPEP).	
Department of Mines, Industry Regulation and Safety (formerly Department of Mines and Petroleum)	Department of Mines, Industry Regulation and Safety is the regulator for the resource industry in WA.	**16 January 2013:** Letter and fact sheet sent by PTTEP AA via post and email regarding Montara Operations EP and scheduled start-up of production. **25 January 2013:** Department confirmed receipt of information and stated it would reply in writing with any comments. **7 February 2013:** Email sent to PTTEP requesting further information regarding the environmental impacts and risk of the activity (also requesting spill model data) and how PTTEP are mitigating these impacts. **11 February 2013:** PTTEP providing information on the potential impact to WA state and what mitigations measures are in place. **30/31 August 2017:** An email was distributed to stakeholders informing them of PTTEP AA's current and upcoming activities on 30 August 2017. Information was provided to stakeholders on the revision to the 2013 Montara Operations EP, the upcoming 5 year review of the Montara Operations EP, the Montara Drilling EP has been accepted by NOPSEMA and notifying stakeholders of the upcoming Cash Maple Offshore Project Proposal was provided to stakeholders. An additional email was sent to stakeholders on 31 August 2017 which superseded the original email dated on 30 August 2017. The initial email contained inaccurate information regarding the improvement notice issued by NOPSEMA. The latest email distributed informed stakeholders of the error and provided them with the correct information. **30 August 2017:** The DMIRS acknowledged receipt of information and informed PTTEP AA that at this stage no further information is required. **15 November 2017:** An email was sent to stakeholders with an attached factsheet that provided information about the revisions made to the Montara Operations EP, including information on the improvement notice issued by NOPSEMA. The email provided a link to the Montara Production	No further action required.

Relevant Stakeholder	Rationale for Engagement	Record of consultation	Required follow-up / actions
		Drilling EP Summary on NOPSEMA's website and informed stakeholders that the drilling campaign was successfully completed over September and October 2017, without incident. The factsheet provided an overview of the revisions that have been made to the EP, which pertained to oil spill modelling, flaring, produced water formation and the Oil Pollution Emergency Plan (OPEP). **17 November 2017:** Email response from the Department, acknowledging receipt of information and informing PTTEP AA that the DMIRS does not require any additional information. DMIRS acknowledges that PTTEP AA is in the process of preparing an OPP for the Cash Maple gas field and would like to be kept informed on the progress of the project.	
Department of Biodiversity Conservation and Attractions (formerly Department of Parks and Wildlife and the Department of Environment and Conservation)	The DBCA is responsible for conserving biodiversity and managing the State's national parks and marine parks.	**16 January 2013:** Letter and fact sheet sent by PTTEP AA via post and email regarding Montara Operations EP and scheduled start-up of production. **25 January 2013:** Director General's office advised via phone the Montara Operations EP information had been forwarded to Environment Management Branch and they will aim to provide comment by email. 4 July 2013: PTTEP AA via phone requested DBCA to outline their role in regards to oiled wildlife response. **12 July 2013**: DPaW recommends that PTTEP AA develops and maintains a baseline understanding of shallow water (<2m) and intertidal benthic habitat, sediment and water characteristics, turtle and seabird nesting and roosting sites within a suitable radius of any future activities (as determined in consultation with DPaW). DPaW informs PTTEP that they will not implement an oiled wildlife response on behalf of a petroleum operator except as part of a whole of government response mandated by regulatory decision makers, and any advice or assistance from DBCA, at any scale, will occur on a full cost recovery basis. **18 July 2013:** PTTEP AA confirmed the OSCP will include the requirement to notify DER (Department of Regulation) in the event of an oil spill entering state waters. **30/31 August 2017:** An email was distributed to stakeholders informing them of PTTEP AA's current and upcoming activities on 30 August 2017. Information was provided to stakeholders on the revision to the 2013 Montara Operations EP, the upcoming 5 year review of the Montara Operations EP, the Montara Drilling EP has been accepted by NOPSEMA and notifying stakeholders of the upcoming Cash Maple Offshore Project Proposal was provided to stakeholders. An additional email was sent to stakeholders on 31 August 2017 which superseded the original email dated on 30 August 2017. The initial email contained inaccurate information regarding the Improvement Notice issued by NOPSEMA. The latest email distributed informed stakeholders of the error and provided them with the correct information. **31 August 2017:** The DBCA acknowledged receipt of information and forwarded the email to the relevant area of the DBCA for response. **15 November 2017:** An email was sent to stakeholders with an attached factsheet that provided information about the revisions made to the Montara Operations EP, including information on the improvement notice issued by NOPSEMA. The email provided a link to the Montara Production Drilling EP Summary on NOPSEMA's website and informed stakeholders that the drilling	No further action required.

Relevant Stakeholder	Rationale for Engagement	Record of consultation	Required follow-up / actions
		campaign was successfully completed over September and October 2017, without incident. The factsheet provided an overview of the revisions that have been made to the EP, which pertained to oil spill modelling, flaring, produced water formation and the Oil Pollution Emergency Plan (OPEP).	
Department of Transport	The Department of Transport is responsible for transport functions and strategic transport planning. The Department of Transport is the Hazard Management Agency for marine oil pollution.	**16 January 2013:** Letter and fact sheet sent by PTTEP AA via post and email regarding Montara Operations EP and scheduled start-up of production. **24 January 2013**: Letter and fact sheet resent by PTTEP AA via post and email to Pollution Response Coordinator and followed up with a phone call. **25 January 2013:** Telephone consultation between DoT and PTTEP AA. DoT sent email to PTTEP AA requesting information be provided as per Department's Industry Consultation Guidelines. **8 February 2013**: PTTEP requesting information and feedback on the role of DoT outlined in the EP. A section of the Draft Montara Operation Oil Spill Contingency Plan was attached for review. **13 February 2013:** DoT provided specific feedback to various sections of the OSCP. DoT would like PTTEP to address specific comments which affect WA DoT's functions, interests and activities. **19 April 2013:** Email/post to DoT addressing each specific comment made by the DoT. **6 May 2013**: DoT stating they are happy that PTTEP have addressed the DoT comments. **30/31 August 2017:** An email was distributed to stakeholders informing them of PTTEP AA's current and upcoming activities on 30 August 2017. Information was provided to stakeholders on the revision to the 2013 Montara Operations EP, the upcoming 5 year review of the Montara Operations EP, the Montara Drilling EP has been accepted by NOPSEMA and notifying stakeholders of the upcoming Cash Maple Offshore Project Proposal was provided to stakeholders. An additional email was sent to stakeholders on 31 August 2017 which superseded the original email dated on 30 August 2017. The initial email contained inaccurate information regarding the Improvement Notice issued by NOPSEMA. The latest email distributed informed stakeholders of the error and provided them with the correct information. **30 August 2017:** The DoT responded acknowledging the information received and forwarded the email to the correct representatives. **15 November 2017:** An email was sent to stakeholders with an attached factsheet that provided information about the revisions made to the Montara Operations EP, including information on the improvement notice issued by NOPSEMA. The email provided a link to the Montara Production Drilling EP Summary on NOPSEMA's website and informed stakeholders that the drilling campaign was successfully completed over September and October 2017, without incident. The factsheet provided an overview of the revisions that have been made to the EP, which pertained to oil spill modelling, flaring, produced water formation and the Oil Pollution Emergency Plan (OPEP). **30 November 2017:** The Department responding to the email dates 15 November 2017 – requesting to see the updated OPEP prior to EP submission to NOPSEMA. The DoT Offshore Petroleum Industry Guidance Note – Marine Oil Pollution is due to be updated at the end of the	DoT to be kept informed of PTTEP AA activities.

Relevant Stakeholder	Rationale for Engagement	Record of consultation	Required follow-up / actions
		year. The DoT would like for PTTEP AA to include the new guidance information into the OPEP. **30 November 2017:** PTTEP AA responding to the DoT acknowledging that new guidance will be issued and that PTTEP AA will get back in contact in early next year (2018).	
Department of Primary Industries and Regional Development (formerly Department of Fisheries)	The Department is the regulatory body responsible for the sustainable use of fish resources and management of commercial fishers.	**14 November 2011:** Letter sent by PTTEP AA regarding Montara field development program. **16 January 2013:** Letter and fact sheet sent by PTTEP AA via post and email regarding Montara Operations EP and scheduled start-up of production. **24 January 2013:** Telephone consultation between DPIRD and PTTEP AA, during which DPIRD recommended PTTEP AA also contact WAFIC and Recfishwest. DoF WA also advised it would provide response in writing. **31 January 2013**: PTTEP AA emailed DPIRD advising of consultation with Recfishwest and WAFIC as previously recommended. **31 January 2013:** DPIRD responded to follow up email and requested shapefile of Petroleum Licences in the Ashmore Cartier area, AC/L7 and AC/L8. **1 February 2013:** PTTEP AA responded with additional maps and coordinates of Montara operations. **4 February 2013:** Email sent to DPIRD, with an attached map and coordinates specific to the actual permit areas (AC/L7 and AC/L8). **7 February 2013:** DoF requesting the EP and OSCP for review. **26 March 2013:** Department sent follow up email to enquire of status of request. **9 April 2013:** PTTEP AA sent email and attached letter to advise Department of consultation with AMSA, Department of Transport, WAFIC, Recfishwest, Northern Demersal Scalefish Fishery and North Coast Shark Fishery licence holders. PTTEP AA informed Department of risk assessment and identification of appropriate mitigation strategies and methods. **30/31 August 2017:** An email was distributed to stakeholders informing them of PTTEP AA's current and upcoming activities on 30 August 2017. Information was provided to stakeholders on the revision to the 2013 Montara Operations EP, the upcoming 5 year review of the Montara Operations EP, the Montara Drilling EP has been accepted by NOPSEMA and notifying stakeholders of the upcoming Cash Maple Offshore Project Proposal was provided to stakeholders. An additional email was sent to stakeholders on 31 August 2017 which superseded the original email dated on 30 August 2017. The initial email contained inaccurate information regarding the Improvement Notice issued by NOPSEMA. The latest email distributed informed stakeholders of the error and provided them with the correct information. **15 November 2017:** An email was sent to stakeholders with an attached factsheet that provided information about the revisions made to the Montara Operations EP, including information on the improvement notice issued by NOPSEMA. The email provided a link to the Montara Production	No further action required.

Relevant Stakeholder	Rationale for Engagement	Record of consultation	Required follow-up / actions
		Drilling EP Summary on NOPSEMA's website and informed stakeholders that the drilling campaign was successfully completed over September and October 2017, without incident. The factsheet provided an overview of the revisions that have been made to the EP, which pertained to oil spill modelling, flaring, produced water formation and the Oil Pollution Emergency Plan (OPEP). **20 November 2017:** Email response from the Department acknowledging receipt of information and informing PTTEP AA that the DPIRD does not have additional information to provide.	
Shire of Wyndham East Kimberley	PTTEP AA keeps the shire informed of PTTEP AA activities.	**30/31 August 2017:** An email was distributed to stakeholders informing them of PTTEP AA's current and upcoming activities on 30 August 2017. Information was provided to stakeholders on the revision to the 2013 Montara Operations EP, the upcoming 5 year review of the Montara Operations EP, the Montara Drilling EP has been accepted by NOPSEMA and notifying stakeholders of the upcoming Cash Maple Offshore Project Proposal was provided to stakeholders. An additional email was sent to stakeholders on 31 August 2017 which superseded the original email dated on 30 August 2017. The initial email contained inaccurate information regarding the Improvement Notice issued by NOPSEMA. The latest email distributed informed stakeholders of the error and provided them with the correct information. **15 November 2017:** An email was sent to stakeholders with an attached factsheet that provided information about the revisions made to the Montara Operations EP, including information on the improvement notice issued by NOPSEMA. The email provided a link to the Montara Production Drilling EP Summary on NOPSEMA's website and informed stakeholders that the drilling campaign was successfully completed over September and October 2017, without incident. The factsheet provided an overview of the revisions that have been made to the EP, which pertained to oil spill modelling, flaring, produced water formation and the Oil Pollution Emergency Plan (OPEP).	No further action required.
NT Government Departments			
Darwin Port Corporation	PTTEP AA seeks to keep the Port informed as the company maintains operational activities in Darwin. It is also possible that in the event of an incident the Port may play a role in assisting coordination of vessel movement.	**16 January 2013:** Letter and fact sheet sent by PTTEP AA via post and email regarding Montara Operations EP and scheduled start-up of production. **23 January 2013:** PTTEP AA telephoned Darwin Port Corporation, who advised the letter and fact sheet would be reviewed by its environmental and oil spill response teams. Corporation indicated it had no comment on the Montara Operations EP and will confirm this in writing to PTTEP AA. **23 January 2013:** PTTEP AA telephoned and sent follow up email regarding Corporation's response. **30/31 August 2017:** An email was distributed to stakeholders informing them of PTTEP AA's current and upcoming activities on 30 August 2017. Information was provided to stakeholders on the revision to the 2013 Montara Operations EP, the upcoming 5 year review of the Montara Operations EP, the Montara Drilling EP has been accepted by NOPSEMA and notifying stakeholders of the upcoming Cash Maple Offshore Project Proposal was provided to stakeholders. An additional email was sent to stakeholders on 31 August 2017 which superseded	No further action required.

Relevant Stakeholder	Rationale for Engagement	Record of consultation	Required follow-up / actions
		the original email dated on 30 August 2017. The initial email contained inaccurate information regarding the Improvement Notice issued by NOPSEMA. The latest email distributed informed stakeholders of the error and provided them with the correct information. **15 November 2017:** An email was sent to stakeholders with an attached factsheet that provided information about the revisions made to the Montara Operations EP, including information on the improvement notice issued by NOPSEMA. The email provided a link to the Montara Production Drilling EP Summary on NOPSEMA's website and informed stakeholders that the drilling campaign was successfully completed over September and October 2017, without incident. The factsheet provided an overview of the revisions that have been made to the EP, which pertained to oil spill modelling, flaring, produced water formation and the Oil Pollution Emergency Plan (OPEP).	
Department of Primary Industry and Resources - Mines and Energy	The Department is the regulator for the resource industry in the Northern Territory.	**16 January 2013:** Letter and fact sheet sent by PTTEP AA via post and email regarding Montara Operations EP and scheduled start-up of production. **29 January 2013:** Department advised PTTEP AA via phone to refer to Commonwealth regulatory authorities and would like to be kept informed of relevant developments. **30/31 August 2017:** An email was distributed to stakeholders informing them of PTTEP AA's current and upcoming activities on 30 August 2017. Information was provided to stakeholders on the revision to the 2013 Montara Operations EP, the upcoming 5 year review of the Montara Operations EP, the Montara Drilling EP has been accepted by NOPSEMA and notifying stakeholders of the upcoming Cash Maple Offshore Project Proposal was provided to stakeholders. An additional email was sent to stakeholders on 31 August 2017 which superseded the original email dated on 30 August 2017. The initial email contained inaccurate information regarding the Improvement Notice issued by NOPSEMA. The latest email distributed informed stakeholders of the error and provided them with the correct information. **15 November 2017:** An email was sent to stakeholders with an attached factsheet that provided information about the revisions made to the Montara Operations EP, including information on the improvement notice issued by NOPSEMA. The email provided a link to the Montara Production Drilling EP Summary on NOPSEMA's website and informed stakeholders that the drilling campaign was successfully completed over September and October 2017, without incident. The factsheet provided an overview of the revisions that have been made to the EP, which pertained to oil spill modelling, flaring, produced water formation and the Oil Pollution Emergency Plan (OPEP).	NT Department of Primary Industry and Resources would like to be kept informed of relevant developments.
Department of Primary Industry and Resources - Primary Industries and Fisheries	The Fisheries Division will assess the potential impact of PTTEP AA proposal on Territory-operated commercial fisheries.	**16 January 2013:** Letter and fact sheet sent by PTTEP AA via post and email regarding Montara Operations EP and scheduled start-up of production. **23 January 2013:** Department advised PTTEP AA that the range of industry associations and commercial operators being consulted was appropriate. **8 February 2013:** Department requesting due consideration be given to the potential impact on commercial fisheries. **30/31 August 2017:** An email was distributed to stakeholders informing them of PTTEP AA's current and upcoming activities on 30 August 2017. Information was provided to stakeholders on	No further action required.

Relevant Stakeholder	Rationale for Engagement	Record of consultation	Required follow-up / actions
		the revision to the 2013 Montara Operations EP, the upcoming 5 year review of the Montara Operations EP, the Montara Drilling EP has been accepted by NOPSEMA and notifying stakeholders of the upcoming Cash Maple Offshore Project Proposal was provided to stakeholders. An additional email was sent to stakeholders on 31 August 2017 which superseded the original email dated on 30 August 2017. The initial email contained inaccurate information regarding the Improvement Notice issued by NOPSEMA. The latest email distributed informed stakeholders of the error and provided them with the correct information. **15 November 2017:** An email was sent to stakeholders with an attached factsheet that provided information about the revisions made to the Montara Operations EP, including information on the improvement notice issued by NOPSEMA. The email provided a link to the Montara Production Drilling EP Summary on NOPSEMA's website and informed stakeholders that the drilling campaign was successfully completed over September and October 2017, without incident. The factsheet provided an overview of the revisions that have been made to the EP, which pertained to oil spill modelling, flaring, produced water formation and the Oil Pollution Emergency Plan (OPEP).	
Department of Chief Minister	The Department of Chief Minister of the Northern Territory is the head of government	Prior to this round of consultation, NT office of the Chief Minister and PTTEP AA has been involved in extensive consultation since the commencement of the Montara Development Plan in early 2008. **16 January 2013:** Letter and fact sheet sent by PTTEP AA via post and email regarding Montara Operations EP and scheduled start-up of production. **1 February 2013:** NT Office of the Chief Minister advised its formal response is being provided through the NT Department of Resources, Minerals and Energy Division. **30/31 August 2017:** An email was distributed to stakeholders informing them of PTTEP AA's current and upcoming activities on 30 August 2017. Information was provided to stakeholders on the revision to the 2013 Montara Operations EP, the upcoming 5 year review of the Montara Operations EP, the Montara Drilling EP has been accepted by NOPSEMA and notifying stakeholders of the upcoming Cash Maple Offshore Project Proposal was provided to stakeholders. An additional email was sent to stakeholders on 31 August 2017 which superseded the original email dated on 30 August 2017. The initial email contained inaccurate information regarding the Improvement Notice issued by NOPSEMA. The latest email distributed informed stakeholders of the error and provided them with the correct information. **15 November 2017:** An email was sent to stakeholders with an attached factsheet that provided information about the revisions made to the Montara Operations EP, including information on the improvement notice issued by NOPSEMA. The email provided a link to the Montara Production Drilling EP Summary on NOPSEMA's website and informed stakeholders that the drilling campaign was successfully completed over September and October 2017, without incident. The factsheet provided an overview of the revisions that have been made to the EP, which pertained to oil spill modelling, flaring, produced water formation and the Oil Pollution Emergency Plan (OPEP).	No further action required.

Relevant Stakeholder	Rationale for Engagement	Record of consultation	Required follow-up / actions
Department of Tourism and Culture (Parks and Wildlife Commission)	The Parks and Wildlife Commission of the Northern Territory is responsible for a comprehensive system of land and marine protected areas across the Northern Territory (NT).	**30/31 August 2017:** An email was distributed to stakeholders informing them of PTTEP AA's current and upcoming activities on 30 August 2017. Information was provided to stakeholders on the revision to the 2013 Montara Operations EP, the upcoming 5 year review of the Montara Operations EP, the Montara Drilling EP has been accepted by NOPSEMA and notifying stakeholders of the upcoming Cash Maple Offshore Project Proposal was provided to stakeholders. An additional email was sent to stakeholders on 31 August 2017 which superseded the original email dated on 30 August 2017. The initial email contained inaccurate information regarding the Improvement Notice issued by NOPSEMA. The latest email distributed informed stakeholders of the error and provided them with the correct information. **15 November 2017:** An email was sent to stakeholders with an attached factsheet that provided information about the revisions made to the Montara Operations EP, including information on the improvement notice issued by NOPSEMA. The email provided a link to the Montara Production Drilling EP Summary on NOPSEMA's website and informed stakeholders that the drilling campaign was successfully completed over September and October 2017, without incident. The factsheet provided an overview of the revisions that have been made to the EP, which pertained to oil spill modelling, flaring, produced water formation and the Oil Pollution Emergency Plan (OPEP).	No further action required.
Environmental Protection Authority	The NT EPA provides advice on the environmental impacts of development proposals and advice and regulatory services to encourage effective waste management, pollution control and sustainable practices.	**8 September 2017:** An email was distributed informing stakeholders of PTTEP AA's current and upcoming activities on 8 September 2017. Information on the revision to the 2013 Montara Operations EP, the upcoming 5 year review of the Montara Operations EP, close out of commitments made in the Montara Drilling EP and notifying stakeholders of the upcoming Cash Maple Offshore Project Proposal was provided to stakeholders. **15 November 2017:** An email was sent to stakeholders with an attached factsheet that provided information about the revisions made to the Montara Operations EP, including information on the improvement notice issued by NOPSEMA. The email provided a link to the Montara Production Drilling EP Summary on NOPSEMA's website and informed stakeholders that the drilling campaign was successfully completed over September and October 2017, without incident. The factsheet provided an overview of the revisions that have been made to the EP, which pertained to oil spill modelling, flaring, produced water formation and the Oil Pollution Emergency Plan (OPEP).	No further action required.
Commercial Fishing Industry			
Commonwealth Fisheries Association	The Commonwealth Fisheries Association (CFA) is the peak body representing the collective rights, responsibilities and interests of a diverse commercial fishing industry in Commonwealth	**2 December 2011**: Letter sent by PTTEP AA regarding Montara field development program. **16 January 2013:** Letter and fact sheet sent by PTTEP AA via post and email regarding Montara Operations EP and scheduled start-up of production. **23 January 2013:** PTTEP AA telephoned and sent follow-up email regarding CFA's response. **31 January 2013:** CFA responded to follow up email, stating no responses had been received or were likely to be received from CFA's members. CFA advised PTTEP AA was already in contact with those companies with interest in the area. **30/31 August 2017:** An email was distributed to stakeholders informing them of PTTEP AA's	No further action required.

Relevant Stakeholder	Rationale for Engagement	Record of consultation	Required follow-up / actions
	regulated fisheries.	current and upcoming activities on 30 August 2017. Information was provided to stakeholders on the revision to the 2013 Montara Operations EP, the upcoming 5 year review of the Montara Operations EP, the Montara Drilling EP has been accepted by NOPSEMA and notifying stakeholders of the upcoming Cash Maple Offshore Project Proposal was provided to stakeholders. An additional email was sent to stakeholders on 31 August 2017 which superseded the original email dated on 30 August 2017. The initial email contained inaccurate information regarding the Improvement Notice issued by NOPSEMA. The latest email distributed informed stakeholders of the error and provided them with the correct information. **15 November 2017:** An email was sent to stakeholders with an attached factsheet that provided information about the revisions made to the Montara Operations EP, including information on the improvement notice issued by NOPSEMA. The email provided a link to the Montara Production Drilling EP Summary on NOPSEMA's website and informed stakeholders that the drilling campaign was successfully completed over September and October 2017, without incident. The factsheet provided an overview of the revisions that have been made to the EP, which pertained to oil spill modelling, flaring, produced water formation and the Oil Pollution Emergency Plan (OPEP).	
NT Seafood Council	Association representing commercial fishery operating in the vicinity of the Operational Area.	**16 January 2013:** Letter and fact sheet sent by PTTEP AA via post and email regarding Montara Operations EP and scheduled start-up of production. **24 January 2013:** PTTEP AA left phone messages and sent follow up email regarding Council's response to Montara Operations EP. Council acknowledged receipt of letter and fact sheet and has no further queries at this stage. **31 January 2013:** PTTEP AA sent follow up email to advise of individual fisheries' responses and requested written response to Montara Operations EP. Council responded, stating previous email serves as its formal response. **30/31 August 2017:** An email was distributed to stakeholders informing them of PTTEP AA's current and upcoming activities on 30 August 2017. Information was provided to stakeholders on the revision to the 2013 Montara Operations EP, the upcoming 5 year review of the Montara Operations EP, the Montara Drilling EP has been accepted by NOPSEMA and notifying stakeholders of the upcoming Cash Maple Offshore Project Proposal was provided to stakeholders. An additional email was sent to stakeholders on 31 August 2017 which superseded the original email dated on 30 August 2017. The initial email contained inaccurate information regarding the Improvement Notice issued by NOPSEMA. The latest email distributed informed stakeholders of the error and provided them with the correct information. **15 November 2017:** An email was sent to stakeholders with an attached factsheet that provided information about the revisions made to the Montara Operations EP, including information on the improvement notice issued by NOPSEMA. The email provided a link to the Montara Production Drilling EP Summary on NOPSEMA's website and informed stakeholders that the drilling campaign was successfully completed over September and October 2017, without incident. The factsheet provided an overview of the revisions that have been made to the EP, which pertained to oil spill modelling, flaring, produced water formation and the Oil Pollution Emergency Plan	No further action required.

Relevant Stakeholder	Rationale for Engagement	Record of consultation	Required follow-up / actions
		(OPEP).	
Joint Authority Managed Shark Fishery	Association representing the Northern Shark Fishery. The fishing area overlaps with the MDP area.	**16 January 2013:** Letter and fact sheet sent by PTTEP AA via post and email regarding Montara Operations EP and scheduled start-up of production. **8 September 2017:** Atlantis Fisheries Consulting Group is an operator in the Joint Authority Managed Shark Fishery. An email was distributed informing stakeholders of PTTEP AA's current and upcoming activities on 8 September 2017. Information on the revision to the 2013 Montara Operations EP, the upcoming 5 year review of the Montara Operations EP, close out of commitments made in the Montara Drilling EP and notifying stakeholders of the upcoming Cash Maple Offshore Project Proposal was provided to stakeholders. **15 November 2017:** An email was sent to stakeholders with an attached factsheet that provided information about the revisions made to the Montara Operations EP, including information on the improvement notice issued by NOPSEMA. The email provided a link to the Montara Production Drilling EP Summary on NOPSEMA's website and informed stakeholders that the drilling campaign was successfully completed over September and October 2017, without incident. The factsheet provided an overview of the revisions that have been made to the EP, which pertained to oil spill modelling, flaring, produced water formation and the Oil Pollution Emergency Plan (OPEP).	No further action required.
Northern Demersal Scalefish Fishery	Association representing the Northern Demersal Scalefish Fishery. The fishing area overlaps with the MDP area.	**16 January 2013:** Letter and fact sheet sent by PTTEP AA via post and email regarding Montara Operations EP and scheduled start-up of production. **30/31 August 2017:** Northern Wildcatch Seafood Australia is an operator and license holder in the Northern Demersal Scalefish Fishery. An email was distributed to stakeholders informing them of PTTEP AA's current and upcoming activities on 30 August 2017. Information was provided to stakeholders on the revision to the 2013 Montara Operations EP, the upcoming 5 year review of the Montara Operations EP, the Montara Drilling EP has been accepted by NOPSEMA and notifying stakeholders of the upcoming Cash Maple Offshore Project Proposal was provided to stakeholders. An additional email was sent to stakeholders on 31 August 2017 which superseded the original email dated on 30 August 2017. The initial email contained inaccurate information regarding the Improvement Notice issued by NOPSEMA. The latest email distributed informed stakeholders of the error and provided them with the correct information. **8 September 2017:** Old Brown Dog Pty Ltd is an operator and license holder in the Northern Demersal Scalefish Fishery. An email was distributed informing stakeholders of PTTEP AA's current and upcoming activities on 30 August 2017. Information on the revision to the 2013 Montara Operations EP, the upcoming 5 year review of the Montara Operations EP, close out of commitments made in the Montara Drilling EP and notifying stakeholders of the upcoming Cash	No further action required.

Relevant Stakeholder	Rationale for Engagement	Record of consultation	Required follow-up / actions
		Maple Offshore Project Proposal was provided to stakeholders. **15 November 2017:** An email was sent to stakeholders with an attached factsheet that provided information about the revisions made to the Montara Operations EP, including information on the improvement notice issued by NOPSEMA. The email provided a link to the Montara Production Drilling EP Summary on NOPSEMA's website and informed stakeholders that the drilling campaign was successfully completed over September and October 2017, without incident. The factsheet provided an overview of the revisions that have been made to the EP, which pertained to oil spill modelling, flaring, produced water formation and the Oil Pollution Emergency Plan (OPEP). **Note: Old Brown Dog Pty Ltd and Northern Wildcatch Seafood Australia are the two license holders in the area.**	
Southern Bluefin Tuna Association	Association representing the Southern Bluefin Tuna Fishery. The fishing area overlaps with the MDP area.	**30/31 August 2017:** An email was distributed to stakeholders informing them of PTTEP AA's current and upcoming activities on 30 August 2017. Information was provided to stakeholders on the revision to the 2013 Montara Operations EP, the upcoming 5 year review of the Montara Operations EP, the Montara Drilling EP has been accepted by NOPSEMA and notifying stakeholders of the upcoming Cash Maple Offshore Project Proposal was provided to stakeholders. An additional email was sent to stakeholders on 31 August 2017 which superseded the original email dated on 30 August 2017. The initial email contained inaccurate information regarding the Improvement Notice issued by NOPSEMA. The latest email distributed informed stakeholders of the error and provided them with the correct information. **15 November 2017:** An email was sent to stakeholders with an attached factsheet that provided information about the revisions made to the Montara Operations EP, including information on the improvement notice issued by NOPSEMA. The email provided a link to the Montara Production Drilling EP Summary on NOPSEMA's website and informed stakeholders that the drilling campaign was successfully completed over September and October 2017, without incident. The factsheet provided an overview of the revisions that have been made to the EP, which pertained to oil spill modelling, flaring, produced water formation and the Oil Pollution Emergency Plan (OPEP).	No further action required.
Northern Prawn Fishery Industry Pty Ltd	Association representing commercial fishery operating in the vicinity of the MDP area.	**24 January 2013**: Letter and fact sheet sent by PTTEP AA via post and email regarding Montara Operations EP and scheduled start-up of production. **31 January 2013:** Northern Prawn Fishery informing PTTEP the survey area is outside the Northern Prawn Fishery current fishing grounds. Northern Prawn Fishery would like to be kept informed with other operator sharing the resource. **31 January 2013:** PTTEP confirming to keeping the NPF informed. **30/31 August 2017:** An email was distributed to stakeholders informing them of PTTEP AA's current and upcoming activities on 30 August 2017. Information was provided to stakeholders on the revision to the 2013 Montara Operations EP, the upcoming 5 year review of the Montara Operations EP, the Montara Drilling EP has been accepted by NOPSEMA and notifying stakeholders of the upcoming Cash Maple Offshore Project Proposal was provided to stakeholders. An additional email was sent to stakeholders on 31 August 2017 which superseded	NPFI requesting to be kept informed.

Relevant Stakeholder	Rationale for Engagement	Record of consultation	Required follow-up / actions
		the original email dated on 30 August 2017. The initial email contained inaccurate information regarding the Improvement Notice issued by NOPSEMA. The latest email distributed informed stakeholders of the error and provided them with the correct information. **15 November 2017:** An email was sent to stakeholders with an attached factsheet that provided information about the revisions made to the Montara Operations EP, including information on the improvement notice issued by NOPSEMA. The email provided a link to the Montara Production Drilling EP Summary on NOPSEMA's website and informed stakeholders that the drilling campaign was successfully completed over September and October 2017, without incident. The factsheet provided an overview of the revisions that have been made to the EP, which pertained to oil spill modelling, flaring, produced water formation and the Oil Pollution Emergency Plan (OPEP).	
Northern Prawn (QLD) Fishery Association	Consultation with Association recommended by AFMA. The Northern Prawn Fishery is located within the vicinity of the MDP area.	**24 January 2013:** Letter and fact sheet sent by PTTEP AA via post and email regarding Montara Operations EP and scheduled start-up of production. **31 January 2013:** PTTEP AA followed up with email regarding Association's response to Montara Operations EP. Stakeholder replied, stating the area is outside its fishing grounds, but wishes to be kept informed. **Note: Communication with Northern Prawn (QLD) Fishery Association ceased as the group became inactive and was succeeded by the Northern Prawn Fishing Industry (NPFI).**	Consultation registry has been updated. No further action required.
Pearl Producers Association	Association representing commercial fishery operating in the vicinity of the MDP area.	**16 January 2013:** Letter and fact sheet sent by PTTEP AA via post and email regarding Montara Operations EP and scheduled start-up of production. **23 January 2013:** PTTEP AA telephoned Pearl Producers Association, who confirmed the letter and fact sheet were distributed to its members. The Association will await members' feedback before responding to PTTEP AA. **30/31 August 2017:** An email was distributed to stakeholders informing them of PTTEP AA's current and upcoming activities on 30 August 2017. Information was provided to stakeholders on the revision to the 2013 Montara Operations EP, the upcoming 5 year review of the Montara Operations EP, the Montara Drilling EP has been accepted by NOPSEMA and notifying stakeholders of the upcoming Cash Maple Offshore Project Proposal was provided to stakeholders. An additional email was sent to stakeholders on 31 August 2017 which superseded the original email dated on 30 August 2017. The initial email contained inaccurate information regarding the Improvement Notice issued by NOPSEMA. The latest email distributed informed stakeholders of the error and provided them with the correct information. **15 November 2017:** An email was sent to stakeholders with an attached factsheet that provided information about the revisions made to the Montara Operations EP, including information on the improvement notice issued by NOPSEMA. The email provided a link to the Montara Production Drilling EP Summary on NOPSEMA's website and informed stakeholders that the drilling campaign was successfully completed over September and October 2017, without incident. The factsheet provided an overview of the revisions that have been made to the EP, which pertained to oil spill modelling, flaring, produced water formation and the Oil Pollution Emergency Plan	No further action required.

Relevant Stakeholder	Rationale for Engagement	Record of consultation	Required follow-up / actions
		(OPEP).	
Relevant Fishing Industry Licence Holders and additional Fishing Industry Representative Bodies	Fisheries which overlap the activity area and Operational Area.	PTTEP AA contacted the relevant fishing industry license holders on 16 January 2013. A Letter and fact sheet sent by PTTEP AA via post and email regarding Montara Operations Environment Plan (EP) and scheduled start-up of production. The following operators below responded to the email sent from PTTEP. **A. Raptis & Sons (fishing operator in NPF):** **16 January 2013:** Letter and fact sheet sent by PTTEP AA via post and email regarding Montara Operations Environment Plan (EP) and scheduled start-up of production. **23 January 2013:** PTTEP AA telephoned and sent follow up email to A. Raptis and Sons regarding Montara Operations EP, resent original letter and fact sheet as requested. **23 January 2013:** A. Raptis and Sons confirmed via email that Montara Operations EP will have no impact on its operations. **8 September 2017:** An email was distributed informing stakeholders of PTTEP AA's current and upcoming activities on 8 September 2017. Information on the revision to the 2013 Montara Operations EP, the upcoming 5 year review of the Montara Operations EP, close out of commitments made in the Montara Drilling EP and notifying stakeholders of the upcoming Cash Maple Offshore Project Proposal was provided to stakeholders. **15 November 2017:** An email was sent to stakeholders with an attached factsheet that provided information about the revisions made to the Montara Operations EP, including information on the improvement notice issued by NOPSEMA. The email provided a link to the Montara Production Drilling EP Summary on NOPSEMA's website and informed stakeholders that the drilling campaign was successfully completed over September and October 2017, without incident. The factsheet provided an overview of the revisions that have been made to the EP, which pertained to oil spill modelling, flaring, produced water formation and the Oil Pollution Emergency Plan (OPEP).	Consultation registry has been updated. No further action required.

Relevant Stakeholder	Rationale for Engagement	Record of consultation	Required follow-up / actions
		Austral Fisheries (fishing operator in NPF): **16 January 2013:** Letter and fact sheet sent by PTTEP AA via post and email regarding Montara Operations EP and scheduled start-up of production. **23 January 2013:** PTTEP AA telephoned and sent follow up email regarding Austral's response to Montara Operations EP. PTTEP AA attached original letter and fact sheet as requested. Austral recommended PTTEP AA contact Jamaclan Marine regarding the North West Shelf Trawl Fishery. **28 January 2013:** Austral Fisheries confirmed via email that Montara Operations will have no impact on NPF or North West Shelf Trawl (NWSTF) operations. Further confirmation of this position was received from Jamaclan Marine on 31 January 2013. **8 September 2017:** An email was distributed informing stakeholders of PTTEP AA's current and upcoming activities on 8 September 2017. Information on the revision to the 2013 Montara Operations EP, the upcoming 5 year review of the Montara Operations EP, close out of commitments made in the Montara Drilling EP and notifying stakeholders of the upcoming Cash Maple Offshore Project Proposal was provided to stakeholders. **15 November 2017:** An email was sent to stakeholders with an attached factsheet that provided information about the revisions made to the Montara Operations EP, including information on the improvement notice issued by NOPSEMA. The email provided a link to the Montara Production Drilling EP Summary on NOPSEMA's website and informed stakeholders that the drilling campaign was successfully completed over September and October 2017, without incident. The factsheet provided an overview of the revisions that have been made to the EP, which pertained to oil spill modelling, flaring, produced water formation and the Oil Pollution Emergency Plan (OPEP).	
		Jamaclan Marine Services (fishing operator in NWSTF): **23 January 2013:** PTTEP AA emailed Jamaclan Marine regarding Montara Operations EP, as recommended by Austral Fisheries. **31 January 2013:** PTTEP AA sent follow up email regarding Jamaclan Marine's response to Montara Operations EP. **31 January 2013:** Jamaclan replied stating they have no concerns at this stage. **8 September 2017:** An email was distributed informing stakeholders of PTTEP AA's current and upcoming activities on 8 September 2017. Information on the revision to the 2013 Montara Operations EP, the upcoming 5 year review of the Montara Operations EP, close out of commitments made in the Montara Drilling EP and notifying stakeholders of the upcoming Cash Maple Offshore Project Proposal was provided to stakeholders. **13 September 2017:** Email provided on 08/09/2017 was undelivered to the designated email address. A phone conversation was held on the 13/09/2017 between ERM and Jamaclan Marine Services. Jamaclan informed ERM; they no longer represent fishing operators/license holders and therefore would like to be kept off the mailing list for future engagement campaign on PTTEP AA activities. **Note: Communication with Jamaclan Marine Services ceased after 13 September 2017, as**	

Relevant Stakeholder	Rationale for Engagement	Record of consultation	Required follow-up / actions
		the group became inactive. **Westmore/WA Seafood's (operates trawlers out of Point Sampson):** **16 January 2013**: Letter and fact sheet sent by PTTEP AA via post and email regarding Montara Operations EP and scheduled start-up of production. **24 January 2013:** PTTEP AA left telephone messages and sent follow up email regarding response to Montara Operations EP. **31 January 2013**: Westmore Seafood's advised that Jamaclan Marine had responded on its behalf. **30/31 August 2017:** An email was distributed to stakeholders informing them of PTTEP AA's current and upcoming activities on 30 August 2017. Information on the revision to the 2013 Montara Operations EP, the upcoming 5 year review of the Montara Operations EP, close out of commitments made in the Montara Drilling EP and notifying stakeholders of the upcoming Cash Maple Offshore Project Proposal was provided to stakeholders. An additional email was sent to stakeholders on 31 August 2017 which superseded the original email dated on 30 August 2017. The initial email contained inaccurate information regarding the Improvement Notice issued by NOPSEMA. The latest email distributed informed stakeholders of the error and provided them with the correct information. **15 November 2017:** An email was sent to stakeholders with an attached factsheet that provided information about the revisions made to the Montara Operations EP, including information on the improvement notice issued by NOPSEMA. The email provided a link to the Montara Production Drilling EP Summary on NOPSEMA's website and informed stakeholders that the drilling campaign was successfully completed over September and October 2017, without incident. The factsheet provided an overview of the revisions that have been made to the EP, which pertained to oil spill modelling, flaring, produced water formation and the Oil Pollution Emergency Plan (OPEP).	
Western Australia Northern Trawl Owners Association	Association representing commercial fishery operating in the vicinity of MDP area.	**16 January 2013:** Letter and fact sheet sent by PTTEP AA via post and email regarding Montara Operations EP and scheduled start-up of production. **31 January 2013**: PTTEP AA telephoned WANTOA and sent follow up email, re-attaching letter and fact sheet as requested. **1 February 2013:** WANTOA advised it would respond in writing if it had any concerns. **Note: Communication with the Western Australian Northern Trawl Owners Association ceased as the group became inactive.**	No further action required. Consultation registry has been updated.
Western Australian Fishing Industry Council	Western Australian Fishing Industry Council is the representing body for commercial fisheries in WA.	**16 January 2013**: Letter and fact sheet sent by PTTEP AA via post and email regarding Montara Operations EP and scheduled start-up of production. **23 January 2013:** PTTEP AA informing WAFIC of current stakeholder consultation being engaged and requesting feedback. **18 February 2013:** WAFIC requesting detailed information on the manner in which consultation with individual fishing enterprise stake holders has been undertaken (including copy of notification materials to affected parties, a copy of consultation material supplied to affected	*PTTEP has consulted with commercial fishing operators within relevant identified fisheries and considered the request but does not consider it necessary to provide records of consultation with individual fishers to WAFIC.*

Relevant Stakeholder	Rationale for Engagement	Record of consultation	Required follow-up / actions
		parties and a list of all parties PTTEP have consulted. **30/31 August 2017:** An email was distributed to stakeholders informing them of PTTEP AA's current and upcoming activities on 30 August 2017. Information was provided to stakeholders on the revision to the 2013 Montara Operations EP, the upcoming 5 year review of the Montara Operations EP, the Montara Drilling EP has been accepted by NOPSEMA and notifying stakeholders of the upcoming Cash Maple Offshore Project Proposal was provided to stakeholders. An additional email was sent to stakeholders on 31 August 2017 which superseded the original email dated on 30 August 2017. The initial email contained inaccurate information regarding the Improvement Notice issued by NOPSEMA. The latest email distributed informed stakeholders of the error and provided them with the correct information. **15 November 2017:** An email was sent to stakeholders with an attached factsheet that provided information about the revisions made to the Montara Operations EP, including information on the improvement notice issued by NOPSEMA. The email provided a link to the Montara Production Drilling EP Summary on NOPSEMA's website and informed stakeholders that the drilling campaign was successfully completed over September and October 2017, without incident. The factsheet provided an overview of the revisions that have been made to the EP, which pertained to oil spill modelling, flaring, produced water formation and the Oil Pollution Emergency Plan (OPEP). **17 November 2017:** Email response from WAFIC acknowledging recipe to information. WAFIC suggesting PTTEP AA as a courtesy informs the relevant license holders in the WA state fisheries. **1 December 2017:** An acknowledgement email was sent to WAFIC.	No further action required.
Recreational Fishing			
Recfishwest	Recfishwest are the representation body for recreational fishers in WA.	**24 January 2013:** PTTEP AA telephoned office as recommended by DoFWA. Letter and fact sheet sent by PTTEP AA via post and email regarding Montara Operations EP and scheduled start-up of production. **29 January 2013**: Recfishwest confirmed via email that Montara Operations EP has no effect on its recreational fishing members' activities. **30/31 August 2017:** An email was distributed to stakeholders informing them of PTTEP AA's current and upcoming activities on 30 August 2017. Information was provided to stakeholders on the revision to the 2013 Montara Operations EP, the upcoming 5 year review of the Montara Operations EP, the Montara Drilling EP has been accepted by NOPSEMA and notifying stakeholders of the upcoming Cash Maple Offshore Project Proposal was provided to stakeholders. An additional email was sent to stakeholders on 31 August 2017 which superseded the original email dated on 30 August 2017. The initial email contained inaccurate information regarding the Improvement Notice issued by NOPSEMA. The latest email distributed informed stakeholders of the error and provided them with the correct information. **15 November 2017:** An email was sent to stakeholders with an attached factsheet that provided information about the revisions made to the Montara Operations EP, including information on the	No further action required.

Relevant Stakeholder	Rationale for Engagement	Record of consultation	Required follow-up / actions
		improvement notice issued by NOPSEMA. The email provided a link to the Montara Production Drilling EP Summary on NOPSEMA's website and informed stakeholders that the drilling campaign was successfully completed over September and October 2017, without incident. The factsheet provided an overview of the revisions that have been made to the EP, which pertained to oil spill modelling, flaring, produced water formation and the Oil Pollution Emergency Plan (OPEP).	
Australian Fishing Trade Association	Association representing, protecting and promoting the recreational fishing industry.	**30/31 August 2017:** An email was distributed to stakeholders informing them of PTTEP AA's current and upcoming activities on 30 August 2017. Information was provided to stakeholders on the revision to the 2013 Montara Operations EP, the upcoming 5 year review of the Montara Operations EP, the Montara Drilling EP has been accepted by NOPSEMA and notifying stakeholders of the upcoming Cash Maple Offshore Project Proposal was provided to stakeholders. An additional email was sent to stakeholders on 31 August 2017 which superseded the original email dated on 30 August 2017. The initial email contained inaccurate information regarding the Improvement Notice issued by NOPSEMA. The latest email distributed informed stakeholders of the error and provided them with the correct information. **15 November 2017:** An email was sent to stakeholders with an attached factsheet that provided information about the revisions made to the Montara Operations EP, including information on the improvement notice issued by NOPSEMA. The email provided a link to the Montara Production Drilling EP Summary on NOPSEMA's website and informed stakeholders that the drilling campaign was successfully completed over September and October 2017, without incident. The factsheet provided an overview of the revisions that have been made to the EP, which pertained to oil spill modelling, flaring, produced water formation and the Oil Pollution Emergency Plan (OPEP).	No further action required.
eNGOs			
Conservation Council WA	NGO with a keen interest in the impact of any proposed PTTEP AA facility on the environment.	**23 January 2013:** Letter and fact sheet sent by PTTEP AA via post and email regarding Montara. **30/31 August 2017:** An email was distributed to stakeholders informing them of PTTEP AA's current and upcoming activities on 30 August 2017. Information was provided to stakeholders on the revision to the 2013 Montara Operations EP, the upcoming 5 year review of the Montara Operations EP, the Montara Drilling EP has been accepted by NOPSEMA and notifying stakeholders of the upcoming Cash Maple Offshore Project Proposal was provided to stakeholders. An additional email was sent to stakeholders on 31 August 2017 which superseded the original email dated on 30 August 2017. The initial email contained inaccurate information regarding the Improvement Notice issued by NOPSEMA. The latest email distributed informed stakeholders of the error and provided them with the correct information. **15 November 2017:** An email was sent to stakeholders with an attached factsheet that provided information about the revisions made to the Montara Operations EP, including information on the improvement notice issued by NOPSEMA. The email provided a link to the Montara Production Drilling EP Summary on NOPSEMA's website and informed stakeholders that the drilling	No further action required.

Relevant Stakeholder	Rationale for Engagement	Record of consultation	Required follow-up / actions
		campaign was successfully completed over September and October 2017, without incident. The factsheet provided an overview of the revisions that have been made to the EP, which pertained to oil spill modelling, flaring, produced water formation and the Oil Pollution Emergency Plan (OPEP).	
Environs Kimberley	NGO with an interest in the impact of any proposed PTTEP AA facility on the environment.	**30/31 August 2017:** An email was distributed to stakeholders informing them of PTTEP AA's current and upcoming activities on 30 August 2017. Information was provided to stakeholders on the revision to the 2013 Montara Operations EP, the upcoming 5 year review of the Montara Operations EP, the Montara Drilling EP has been accepted by NOPSEMA and notifying stakeholders of the upcoming Cash Maple Offshore Project Proposal was provided to stakeholders. An additional email was sent to stakeholders on 31 August 2017 which superseded the original email dated on 30 August 2017. The initial email contained inaccurate information regarding the Improvement Notice issued by NOPSEMA. The latest email distributed informed stakeholders of the error and provided them with the correct information. **15 November 2017:** An email was sent to stakeholders with an attached factsheet that provided information about the revisions made to the Montara Operations EP, including information on the improvement notice issued by NOPSEMA. The email provided a link to the Montara Production Drilling EP Summary on NOPSEMA's website and informed stakeholders that the drilling campaign was successfully completed over September and October 2017, without incident. The factsheet provided an overview of the revisions that have been made to the EP, which pertained to oil spill modelling, flaring, produced water formation and the Oil Pollution Emergency Plan (OPEP).	
World Wildlife Fund	NGO with a keen interest in the impact of any proposed PTTEP AA facility on the environment.	**16 January 2013**: Letter and fact sheet sent by PTTEP AA via post and email regarding Montara Operations EP and scheduled start-up of production. **23 January 2013:** PTTEP AA telephoned WWF, who confirmed receipt of letter and fact sheet. WWF will consider whether it wants to make comment and, if so, will do so in writing. **23 January 2013:** PTTEP AA sent WWF follow-up email confirming the above. **30/31 August 2017:** An email was distributed to stakeholders informing them of PTTEP AA's current and upcoming activities on 30 August 2017. Information was provided to stakeholders on the revision to the 2013 Montara Operations EP, the upcoming 5 year review of the Montara Operations EP, the Montara Drilling EP has been accepted by NOPSEMA and notifying stakeholders of the upcoming Cash Maple Offshore Project Proposal was provided to stakeholders. An additional email was sent to stakeholders on 31 August 2017 which superseded the original email dated on 30 August 2017. The initial email contained inaccurate information regarding the Improvement Notice issued by NOPSEMA. The latest email distributed informed stakeholders of the error and provided them with the correct information. **31 August 2017**: Email response from WWF acknowledging receipt of information. Information is currently being reviewed by the team. **15 November 2017:** An email was sent to stakeholders with an attached factsheet that provided information about the revisions made to the Montara Operations EP, including information on the improvement notice issued by NOPSEMA. The email provided a link to the Montara Production	No further action required.

Relevant Stakeholder	Rationale for Engagement	Record of consultation	Required follow-up / actions
		Drilling EP Summary on NOPSEMA's website and informed stakeholders that the drilling campaign was successfully completed over September and October 2017, without incident. The factsheet provided an overview of the revisions that have been made to the EP, which pertained to oil spill modelling, flaring, produced water formation and the Oil Pollution Emergency Plan (OPEP).	
The Wilderness Society	NGO with an interest in the impact of any proposed PTTEP AA facility on the environment.	**30/31 August 2017:** An email was distributed to stakeholders informing them of PTTEP AA's current and upcoming activities on 30 August 2017. Information was provided to stakeholders on the revision to the 2013 Montara Operations EP, the upcoming 5 year review of the Montara Operations EP, the Montara Drilling EP has been accepted by NOPSEMA and notifying stakeholders of the upcoming Cash Maple Offshore Project Proposal was provided to stakeholders. An additional email was sent to stakeholders on 31 August 2017 which superseded the original email dated on 30 August 2017. The initial email contained inaccurate information regarding the Improvement Notice issued by NOPSEMA. The latest email distributed informed stakeholders of the error and provided them with the correct information. **15 November 2017:** An email was sent to stakeholders with an attached factsheet that provided information about the revisions made to the Montara Operations EP, including information on the improvement notice issued by NOPSEMA. The email provided a link to the Montara Production Drilling EP Summary on NOPSEMA's website and informed stakeholders that the drilling campaign was successfully completed over September and October 2017, without incident. The factsheet provided an overview of the revisions that have been made to the EP, which pertained to oil spill modelling, flaring, produced water formation and the Oil Pollution Emergency Plan (OPEP).	
O&G Industry			
Bounty Oil & Gas NL	Oil and Gas company holding adjacent permit AC/P 32.	**16 January 2013:** Letter and fact sheet sent by PTTEP AA via post and email regarding Montara Operations EP and scheduled start-up of production. **25 January 2013:** PTTEP AA telephoned and left message regarding company's response to the EP. **31 January 2013:** PTTEP AA resent letter and fact sheet regarding Montara Operations EP. **30/31 August 2017:** An email was distributed to stakeholders informing them of PTTEP AA's current and upcoming activities on 30 August 2017. Information was provided to stakeholders on the revision to the 2013 Montara Operations EP, the upcoming 5 year review of the Montara Operations EP, the Montara Drilling EP has been accepted by NOPSEMA and notifying stakeholders of the upcoming Cash Maple Offshore Project Proposal was provided to stakeholders. An additional email was sent to stakeholders on 31 August 2017 which superseded the original email dated on 30 August 2017. The initial email contained inaccurate information regarding the Improvement Notice issued by NOPSEMA. The latest email distributed informed stakeholders of the error and provided them with the correct information. **15 November 2017:** An email was sent to stakeholders with an attached factsheet that provided information about the revisions made to the Montara Operations EP, including information on the	No further action required.

Relevant Stakeholder	Rationale for Engagement	Record of consultation	Required follow-up / actions
		improvement notice issued by NOPSEMA. The email provided a link to the Montara Production Drilling EP Summary on NOPSEMA's website and informed stakeholders that the drilling campaign was successfully completed over September and October 2017, without incident. The factsheet provided an overview of the revisions that have been made to the EP, which pertained to oil spill modelling, flaring, produced water formation and the Oil Pollution Emergency Plan (OPEP).	
Oil Spill Response Limited	Responsible for providing resources and technical support in the event of a marine oil spill.	**16 January 2013**: Letter and fact sheet sent by PTTEP AA via post and email regarding Montara Operations EP and scheduled start-up of production. **24 January 2013:** PTTEP AA sent follow up email regarding OSRL's response to Montara Operations EP. OSRL acknowledged receipt of fact sheet and letter via email and post. **30/31 August 2017:** An email was distributed to stakeholders informing them of PTTEP AA's current and upcoming activities on 30 August 2017. Information was provided to stakeholders on the revision to the 2013 Montara Operations EP, the upcoming 5 year review of the Montara Operations EP, the Montara Drilling EP has been accepted by NOPSEMA and notifying stakeholders of the upcoming Cash Maple Offshore Project Proposal was provided to stakeholders. An additional email was sent to stakeholders on 31 August 2017 which superseded the original email dated on 30 August 2017. The initial email contained inaccurate information regarding the Improvement Notice issued by NOPSEMA. The latest email distributed informed stakeholders of the error and provided them with the correct information. **15 November 2017:** An email was sent to stakeholders with an attached factsheet that provided information about the revisions made to the Montara Operations EP, including information on the improvement notice issued by NOPSEMA. The email provided a link to the Montara Production Drilling EP Summary on NOPSEMA's website and informed stakeholders that the drilling campaign was successfully completed over September and October 2017, without incident. The factsheet provided an overview of the revisions that have been made to the EP, which pertained to oil spill modelling, flaring, produced water formation and the Oil Pollution Emergency Plan (OPEP).	No further action required.
Melbana Energy Limited (formerly MEO) / Vulcan Exploration Pty Ltd	Melbana Energy have operations in adjoining permit area through subsidiary Vulcan Exploration.	**16 January 2013**: Letter and fact sheet sent to Vulcan Exploration by PTTEP AA via post and email regarding Montara Operations EP and scheduled start-up of production. **29 January 2013:** PTTEP AA resent letter and fact sheet, requesting feedback from Melbana Energy Limited as they are a title block holder in close proximity. **30/31 August 2017:** An email was distributed to stakeholders informing them of PTTEP AA's current and upcoming activities on 30 August 2017. Information was provided to stakeholders on the revision to the 2013 Montara Operations EP, the upcoming 5 year review of the Montara Operations EP, the Montara Drilling EP has been accepted by NOPSEMA and notifying stakeholders of the upcoming Cash Maple Offshore Project Proposal was provided to stakeholders. An additional email was sent to stakeholders on 31 August 2017 which superseded the original email dated on 30 August 2017. The initial email contained inaccurate information regarding the Improvement Notice issued by NOPSEMA. The latest email distributed informed stakeholders of the error and provided them with the correct information.	No further action required.

Relevant Stakeholder	Rationale for Engagement	Record of consultation	Required follow-up / actions
		15 November 2017: An email was sent to stakeholders with an attached factsheet that provided information about the revisions made to the Montara Operations EP, including information on the improvement notice issued by NOPSEMA. The email provided a link to the Montara Production Drilling EP Summary on NOPSEMA's website and informed stakeholders that the drilling campaign was successfully completed over September and October 2017, without incident. The factsheet provided an overview of the revisions that have been made to the EP, which pertained to oil spill modelling, flaring, produced water formation and the Oil Pollution Emergency Plan (OPEP).	
Sinopec Oil & Gas Australia	Sinopec have in the vicinity of the permit area through subsidiary Vulcan Exploration.	**16 January 2013:** Letter and fact sheet sent by PTTEP AA via post and email regarding Montara Operations EP and scheduled start-up of production. **31 January 2013:** Telephone consultation between PTTEP AA and Sinopec. **31 January 2013:** PTTEP AA resent letter and fact sheet via email and post to HES division, as requested. **8 September 2017:** An email was distributed to stakeholders informing them of PTTEP AA's current and upcoming activities on 7 September 2017. Information on the revision to the 2013 Montara Operations EP, the upcoming 5 year review of the Montara Operations EP, close out of commitments made in the Montara Drilling EP and notifying stakeholders of the upcoming Cash Maple Offshore Project Proposal was provided to stakeholders. **15 November 2017:** An email was sent to stakeholders with an attached factsheet that provided information about the revisions made to the Montara Operations EP, including information on the improvement notice issued by NOPSEMA. The email provided a link to the Montara Production Drilling EP Summary on NOPSEMA's website and informed stakeholders that the drilling campaign was successfully completed over September and October 2017, without incident. The factsheet provided an overview of the revisions that have been made to the EP, which pertained to oil spill modelling, flaring, produced water formation and the Oil Pollution Emergency Plan (OPEP).	No further action required.
Bounty Oil and Gas NL	Operator located in the vicinity of the Montara Operations title blocks.	**8 September 2017:** An email was distributed to stakeholders informing them of PTTEP AA's current and upcoming activities on 7 September 2017. Information on the revision to the 2013 Montara Operations EP, the upcoming 5 year review of the Montara Operations EP, close out of commitments made in the Montara Drilling EP and notifying stakeholders of the upcoming Cash Maple Offshore Project Proposal was provided to stakeholders. **15 November 2017:** An email was sent to stakeholders with an attached factsheet that provided information about the revisions made to the Montara Operations EP, including information on the improvement notice issued by NOPSEMA. The email provided a link to the Montara Production Drilling EP Summary on NOPSEMA's website and informed stakeholders that the drilling campaign was successfully completed over September and October 2017, without incident. The factsheet provided an overview of the revisions that have been made to the EP, which pertained to oil spill modelling, flaring, produced water formation and the Oil Pollution Emergency Plan (OPEP).	No further action required.

Relevant Stakeholder	Rationale for Engagement	Record of consultation	Required follow-up / actions
Finder Exploration Pty Ltd	Operator located in the vicinity of the Montara Operations title blocks.	**30/31 August 2017:** An email was distributed to stakeholders informing them of PTTEP AA's current and upcoming activities on 30 August 2017. Information was provided to stakeholders on the revision to the 2013 Montara Operations EP, the upcoming 5 year review of the Montara Operations EP, the Montara Drilling EP has been accepted by NOPSEMA and notifying stakeholders of the upcoming Cash Maple Offshore Project Proposal was provided to stakeholders. An additional email was sent to stakeholders on 31 August 2017 which superseded the original email dated on 30 August 2017. The initial email contained inaccurate information regarding the Improvement Notice issued by NOPSEMA. The latest email distributed informed stakeholders of the error and provided them with the correct information. **15 November 2017:** An email was sent to stakeholders with an attached factsheet that provided information about the revisions made to the Montara Operations EP, including information on the improvement notice issued by NOPSEMA. The email provided a link to the Montara Production Drilling EP Summary on NOPSEMA's website and informed stakeholders that the drilling campaign was successfully completed over September and October 2017, without incident. The factsheet provided an overview of the revisions that have been made to the EP, which pertained to oil spill modelling, flaring, produced water formation and the Oil Pollution Emergency Plan (OPEP).	No further action required.
Other Relevant Organisations/Persons			
Nextgen Networks	Nextgen Networks owns/operates infrastructure and subcables in the NWMR.	**30/31 August 2017:** An email was distributed to stakeholders informing them of PTTEP AA's current and upcoming activities on 30 August 2017. Information was provided to stakeholders on the revision to the 2013 Montara Operations EP, the upcoming 5 year review of the Montara Operations EP, the Montara Drilling EP has been accepted by NOPSEMA and notifying stakeholders of the upcoming Cash Maple Offshore Project Proposal was provided to stakeholders. An additional email was sent to stakeholders on 31 August 2017 which superseded the original email dated on 30 August 2017. The initial email contained inaccurate information regarding the improvement notice issued by NOPSEMA. The latest email distributed informed stakeholders of the error and provided them with the correct information. **15 November 2017:** An email was sent to stakeholders with an attached factsheet that provided information about the revisions made to the Montara Operations EP, including information on the improvement notice issued by NOPSEMA. The email provided a link to the Montara Production Drilling EP Summary on NOPSEMA's website and informed stakeholders that the drilling campaign was successfully completed over September and October 2017, without incident. The factsheet provided an overview of the revisions that have been made to the EP, which pertained to oil spill modelling, flaring, produced water formation and the Oil Pollution Emergency Plan (OPEP).	No further action required.
Telstra	Telstra owns/operates infrastructure and subcables in the NWMR.	**30/31 August 2017:** An email was distributed to stakeholders informing them of PTTEP AA's current and upcoming activities on 30 August 2017. Information was provided to stakeholders on the revision to the 2013 Montara Operations EP, the upcoming 5 year review of the Montara Operations EP, the Montara Drilling EP has been accepted by NOPSEMA and notifying	No further action required.

Relevant Stakeholder	Rationale for Engagement	Record of consultation	Required follow-up / actions
		stakeholders of the upcoming Cash Maple Offshore Project Proposal was provided to stakeholders. An additional email was sent to stakeholders on 31 August 2017 which superseded the original email dated on 30 August 2017. The initial email contained inaccurate information regarding the Improvement Notice issued by NOPSEMA. The latest email distributed informed stakeholders of the error and provided them with the correct information.30 August 2017: Telstra replied to initial email acknowledging information received. **15 November 2017:** An email was sent to stakeholders with an attached factsheet that provided information about the revisions made to the Montara Operations EP, including information on the improvement notice issued by NOPSEMA. The email provided a link to the Montara Production Drilling EP Summary on NOPSEMA's website and informed stakeholders that the drilling campaign was successfully completed over September and October 2017, without incident. The factsheet provided an overview of the revisions that have been made to the EP, which pertained to oil spill modelling, flaring, produced water formation and the Oil Pollution Emergency Plan (OPEP).	
Australian Northwest Tourism	Stakeholder with an interest in the impact of any proposed PTTEP AA facility on the environment.	**30/31 August 2017:** An email was distributed to stakeholders informing them of PTTEP AA's current and upcoming activities on 30 August 2017. Information was provided to stakeholders on the revision to the 2013 Montara Operations EP, the upcoming 5 year review of the Montara Operations EP, the Montara Drilling EP has been accepted by NOPSEMA and notifying stakeholders of the upcoming Cash Maple Offshore Project Proposal was provided to stakeholders. An additional email was sent to stakeholders on 31 August 2017 which superseded the original email dated on 30 August 2017. The initial email contained inaccurate information regarding the Improvement Notice issued by NOPSEMA. The latest email distributed informed stakeholders of the error and provided them with the correct information. **15 November 2017:** An email was sent to stakeholders with an attached factsheet that provided information about the revisions made to the Montara Operations EP, including information on the improvement notice issued by NOPSEMA. The email provided a link to the Montara Production Drilling EP Summary on NOPSEMA's website and informed stakeholders that the drilling campaign was successfully completed over September and October 2017, without incident. The factsheet provided an overview of the revisions that have been made to the EP, which pertained to oil spill modelling, flaring, produced water formation and the Oil Pollution Emergency Plan (OPEP).	No further action required.
Tourism Western Australia	Stakeholder with an interest in the impact of any proposed PTTEP AA facility on the environment.	**30/31 August 2017:** An email was distributed to stakeholders informing them of PTTEP AA's current and upcoming activities on 30 August 2017. Information was provided to stakeholders on the revision to the 2013 Montara Operations EP, the upcoming 5 year review of the Montara Operations EP, the Montara Drilling EP has been accepted by NOPSEMA and notifying stakeholders of the upcoming Cash Maple Offshore Project Proposal was provided to stakeholders. An additional email was sent to stakeholders on 31 August 2017 which superseded the original email dated on 30 August 2017. The initial email contained inaccurate information regarding the Improvement Notice issued by NOPSEMA. The latest email distributed informed stakeholders of the error and provided them with the correct information.	No further action required.

Relevant Stakeholder	Rationale for Engagement	Record of consultation	Required follow-up / actions
		15 November 2017: An email was sent to stakeholders with an attached factsheet that provided information about the revisions made to the Montara Operations EP, including information on the improvement notice issued by NOPSEMA. The email provided a link to the Montara Production Drilling EP Summary on NOPSEMA's website and informed stakeholders that the drilling campaign was successfully completed over September and October 2017, without incident. The factsheet provided an overview of the revisions that have been made to the EP, which pertained to oil spill modelling, flaring, produced water formation and the Oil Pollution Emergency Plan (OPEP).	